Enterprise Risk Management: Data
June 2009 | Volume22/No6

In search of the gold standard

Data is fundamental to enterprise risk management systems. Some banks have looked to build single, consistent central sources of information for risk analysis, but how are they tackling this task? Is this goal even achievable? By Clive Davidson

Any financial institution attempting to build an enterprise risk management infrastructure must start with the issue of data. It is a cliche to say data is the lifeblood of the financial sector, yet for all the acknowledgement of the importance of data by risk managers, senior management, regulators and industry bodies over the years, its problems are largely unresolved - and in many ways are getting worse.

Regulators have pointed to incomplete, inconsistent and unreliable data as contributing to the financial crisis, and continuing inadequacies in this area are a major obstacle to more robust and efficient markets. "Weak micro-data (non-aggregated data) certainly didn't help in the current crisis, adding uncertainty where there was enough already," says Francis Gross, manager, external statistics division at the European Central Bank (ECB). "It limits essential functions such as market transparency, regulation, systemic risk analysis and not least automation."

So what can be done? At an industry level, there have been many initiatives over the years to improve data and create standards, such as the Financial Information eXchange standard for securities transactions and the Financial Products Markup Language for derivatives. But these have gained only limited traction and none get to the root of the problem.

Regardless of industry initiatives, financial institutions must deal with the current reality of data, with all its multiplicity of sources and formats, if they want to get a grip on their enterprise risk management. Individually, they must set about making the data they use in their business and risk management complete, consistent and reliable. To do this, many are creating a central standardised repository, commonly known as a 'golden copy'. But creating a golden copy is a huge undertaking, with many challenges. And while internal standardisation is a necessary step towards rationalising financial data, each golden copy is different, and collectively they do not add up to a solution that will address market transparency and systemic risk.

The problem with much financial data is not that it is unreliable at the point where it is issued, says Michael Atkin, managing director of the Enterprise Data Management Council (EDMC), a not-for-profit financial industry body. "The data is pretty much perfect when it is created at issuance. It is crafted by lawyers and accountants who are inherently precise. Then many different vendors acquire it and transform it, rename it and make it work with their own internal requirements and systems. They then sell it on to business units in financial institutions, which again transform it to match their internal environments. So the likelihood you have any consistency in the data among vendors or even business units within an institution is zero."

These transformations cannot be avoided, because although the original data may be precise, it comes in a multiplicity of formats. The lawyers and accountants aren't required to follow

any standards when they formulate financial instruments, while exchanges and other organisations each use their own symbols and data models when issuing information like corporate actions. Vendors collect all this data, and while they transform it into their own internal standards, there is no consistency across information providers. Meanwhile, trading, risk and other business applications, whether third-party or developed in-house, more often than not use different formats again when handling data. "Creating a golden copy is therefore essential and the right thing for financial institutions to do from a tactical perspective," says Atkin.

Many financial institutions agree, noting the mish-mash of data formats makes it difficult to create a coherent picture of risks. "It is absolutely essential we standardise our data so we can have good quality information for the entire management life cycle, from making investment decisions, to performing compliance tests or reporting to clients," says Tracey Plantier, managing director at fixed-income manager Babson Capital in Springfield, Massachusetts. "One of our biggest challenges is that the external data providers and the vendor packages for different asset classes all identify their data differently."

It is not only the breadth, but the complexity of the data that creates challenges. "We not only need prices, but volatilities, implied volatilities, correlations and other things," says Rachid Lassoued, head of financial engineering at Societe Generale Securities Services (SGSS). Finding appropriate data and the required level of detail can be a challenge, especially for over-the-counter derivatives. "You can't rely on one mainstream data provider like Bloomberg or Reuters. They each have some of the data but not all, so we have to go to specialist providers or brokers." Each provider has its own data format, and the cleanliness of the data differs from source to source, he adds.

As there is no ideal external source for some reference data, institutions must create their own data record from a number of different internal sources. This can present ownership problems and challenges in terms of getting support for the workflow to collect and create the data records.

To deal with these difficulties and create a golden copy of their data, a number of institutions have implemented enterprise data management platforms. Some have built the platforms for themselves, while others have used specialist third-party technology from vendors such as Thomson Reuters, New York-based Asset Control, New York-based GoldenSource and London-based Xenomorph.

SGSS has adopted Xenomorph's tools to acquire, clean, standardise and integrate data, as well as using its central database to store the SGSS golden copy. The tools allow the firm to compare the same data from different sources and to encode rules to deal with discrepancies. For example, the system can compare yield curves from Reuters and Bloomberg, taking the average if the difference between the two is less than 10 basis points and undertaking a different action if it is greater. More sophisticated mathematical rules can look for things such as arbitrage in volatility surfaces. Inevitably, issues arise in the data that the tools cannot deal with automatically, and these must be resolved by data management experts. The end result is a comprehensive clean set of data converted - or 'mapped' to use the preferred data management term - to SGSS's internal standard format. "When this is all done, we have a golden copy - validated data we can use for valuation and risk analysis," says Lassoued.

But even when a bank has created its golden copy, the challenges don't end there. A single central repository of data may solve consistency problems and bring a number of other advantages, but it can also introduce risks such as a single central point of potential failure. This applies both operationally, in terms of database stability, and in terms of the quality of the data - if it is wrong, it will be wrong throughout the bank.

Achieving stability and accuracy of the golden copy is a top priority at Morgan Stanley. A number of factors are required to achieve this stability - for instance, having a mature production management organisation that deals with various day-to-day processes, such as 'turnovers' (where the data or the programming code are updated), explains Robert Casper, managing director and global head of Morgan Stanley's enterprise data group. These procedures include: proper testing before a turnover is implemented; informing all relevant departments that use the data; having a back-out plan in case there is a problem; and appropriate checks as to whether the changes have occurred and have had the desired effects. "Achieving stability can also involve looking at your data architecture to see if you can simplify it - for example, by decommissioning legacy systems," says Casper.

As the golden copy is the single central source of data, it can amplify the consequences of any changes, so these must be carefully managed. Business units might not be anticipating the changes, while the modification can affect reporting or other processes. "As more and more downstream and upstream applications converge on a single data source, there can be a real ripple effect when making changes, even if you make the changes correctly," says Casper.

Another issue for golden copies is coping with growth. The technology underlying the golden copy must allow the institution to scale up the database as requirements dictate. For pricing and risk purposes, SGSS stores around 1,000 data points for the volatility surface of a stock. "If you have 700 of the most used stocks then add indexes and other specific stocks, the data for volatility surfaces alone soon adds up - and that is just for equities," says Lassoued. Add similar amounts of information for other asset classes and factors and the volume of data becomes huge. "The system must be able to scale up if you double the number of data points, and it must still be reliable and responsive in the same time scale necessary for the business," he adds.

What is more, all the data has to be stored, day after day. French law requires much of the information to be kept for 10 years. Not only must the data be stored, it must also be accessible. The data platform must be constructed so it can recall and manage the archive data without running into memory or other problems, explains Lassoued.

Creating a golden copy and dealing with all the issues that come with it takes time. SGSS started its golden copy project in 2003. Morgan Stanley began certain reference data efforts in 1998 with a project to improve its client data, but the advantages of high-quality, standardised and centralised data had become clear by 2001 and the bank has steadily expanded its enterprise data efforts ever since. However, it has been no small task.

"Getting firms to standardise internally is a huge leap," says Casper. "There are many different constituencies to represent and a lot of opinions to bridge. Even when you get agreement, it requires years to achieve convergence on the standards."

Data management platforms and the variety of financial applications they serve take time and investment to integrate - and that requires management buy-in and support. "You can get buy-

in and support, but senior management can turn over at a healthy frequency in this industry, so you must renew that commitment as management changes occur," says Casper.

A big part of the problem across the industry is the low profile of data. "With models, there is plentiful documentation and an academic community constantly providing new ideas, whereas data is the poor relation," says Lassoued. "People don't look at it in the same way as models because it is operational. They forget their models depend on data, and if data is incorrect, then the type and quality of the model is irrelevant."

Data is often lumped in with technology and/or operations. Morgan Stanley is rare in treating it as distinct from both, and giving it its own status and resources. Babson Capital has a core enterprise data management group, which works closely with the firm's business units, but is separate and determines the governance and policies around data.

Because of its low profile, the effort required to produce quality enterprise data is often hidden and overlooked. "A lot of people, whether senior management or others, tend to take for granted the fact their institution might be able to do things such as easily identify who all its clients are or isolate all its business with UK insurance companies. But the truth of the matter is that questions like these are easily asked but not easily answered, and they set off enormous fire drills in institutions that haven't spent a lot of money on getting their data right," says Casper.

Institutions such as Morgan Stanley, SGSS and Babson Capital have made good progress in creating golden copies of their data, but many others are still struggling. While such projects are essential tactical responses for individual institutions, they do not solve the strategic industry-wide problem. A bank's golden copy may be precise, clean and internally consistent, but it is different from every other firm's golden copy. And every institution has to repeat the same long tedious resource-intensive process of creating its repository, with few opportunities for collaboration.

"The industry is stuck in a data transformation hell and a mapping nightmare," says the EDMC's Atkin. Meanwhile, the lack of industry data standards is hampering critical automation and market transparency, making regulation more difficult and limiting systemic risk analysis, says the ECB's Gross.

The only way the industry will escape from its current data nightmare is to create cross-industry standards, says Atkin - not thousands of golden copies but a single 'golden source'. The cross-industry standards will apply at the point of origination of the data and apply throughout their life cycle, making the whole gruelling effort of transformation and mapping redundant.

A golden source is a fine ideal, but too many data standardisation initiatives have run into the sand over the years for there not to be considerable scepticism about such a project. But, as with many other areas of finance, the crisis has changed things. No-one can argue any longer that the industry can get by on incomplete, inconsistent and unreliable data. A growing body of opinion believes it is time for a new initiative and the industry needs to rally around a project that will address the problems of financial data once and for all at its roots. Proposals are on the table, backed by the EDMC and the ECB, which Risk will look at in detail next month.

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[back to top]