Illustration: Galia Bernstein, nbillustration

Runaway adjustments

Harnessing credit and debit valuation adjustments to credit default swaps may have seemed a good idea a few years ago, but as that market shrinks, it is eroding their foundations. ***Laurie Carver*** *reports*

In the space of three trading days, starting on November 30, 2012, the credit default swap (CDS) spread for Natixis fell 7.4%. During that period, a single trade was executed. In the three prior weeks, the CDS had not traded at all.

That shows how jumpy and illiquid the CDS market can be, even for relatively large banks, and the same kind of results pop up time and again when trade frequencies – compiled by risk software vendor Kamakura – are overlaid with spread histories (see figure 1). The CDS price appears to evolve in a fairly fluid fashion, but in many cases it goes for long periods without any trading to support it. The spread is essentially a composite of dealer estimates – and Kamakura's chief executive compares it to another composite of bank estimates.

"It's like Libor – when vital numbers are tied to quotes that are disconnected from trades, there will be an incentive for manipulation. If I were a chief financial officer of a major company and I wanted my spread to be *x* rather than *y*, I don't think it would take more than a couple of phone calls," says Donald van Deventer, who is also founder of the Honolulu-based firm.

That's an extreme view – and dealers would no doubt disagree – but there is far more at stake than the credibility of the CDS market. Banks that want to model the credit valuation adjustment (CVA) capital charge contained in Basel III – which measures derivatives counterparty risk – are required by the regulators to use CDS spreads as the input. And CVA's sibling – the debit valuation adjustment (DVA) that measures the impact of changes in a bank's creditworthiness on the value of its own derivatives liabilities – should also be based on market data according to International Financial Reporting Standard (IFRS) 13, which came into force at the start of this year. As a bank becomes less robust, its liabilities drop in value, which is reported as a profit. When credit improves, the opposite happens. A survey published by Ernst & Young last October found 12 of 13 banks voluntarily reporting DVA based it on their own CDS spreads.

That may work when a bank's own CDS is trading regularly, but – as the Natixis example shows – there are cases when it is not. If the French bank had been using its CDSs as an own-credit metric, last December's sliding spreads would – in theory – have forced it to mark down its derivatives liabilities, worth €122 billion as of the end of 2011, even though only one trade went through at the time. Similar problems apply to CVA, from both a capital and accounting perspective – IFRS 13 requires it to be reported alongside DVA.

Put crudely, instead of hitching the CVA and DVA wagons to something steady, precise and reliable, fears are growing that these hugely important new values have been tied to a market that is sometimes volatile, sometimes stubbornly inactive, but always temperamental – a mule rather than a carthorse.

"We were surprised that regulators made CVA and DVA so dependent on this market because we know it can be illiquid – I think it puts too much pressure on our book, on our business. It's a big issue," says the head of fixed income at one UK bank.

When individual CDSs are illiquid, Basel III and IFRS 13 allow banks to use proxy measures of credit risk, but the guidance provided by bank regulators and accountants is thin.

Ian Harris, Credit Suisse

For CVA, to which both sets of rules apply, the guidance is also conflicting. As a result, a proxying approach that would make sense from a capital perspective would leave a bank with additional profit-and-loss volatility – and vice versa.

Adding to this litany of woes, the CDS market – for single names, as opposed to indexes – is shrinking, both in terms of volume and coverage. And this trend may be accelerated by proxying guidance from the Basel Committee on Banking Supervision, published in December, that prevents banks gaining any CVA capital relief when using a single-name CDS proxy as a hedge. An index containing the proxy is acceptable, the regulators say.

"You have this odd situation where the standard setters and regulators are tying CVA and DVA to CDS markets just as they become more and more illiquid. There seems to be a huge amount of leeway that can be used in proxying – it's fair to say some sophisticated banks are doing some fairly unsophisticated things. And there is a tension between what is the best approach with respect to earnings volatility and what is best for capital – it could be dangerous. I don't think all the implications have been thought through," says Jon Gregory, a partner at consultancy Solum Financial.

Those fears are shared by some within the industry. "It's appropriate in spirit that things contributing to accounting volatility should go into capital requirements, but when we tied counterparty risk to CDS spreads, did we know what it would be driven by? If the big changes are driven by illiquid, model-based numbers, then is that valid? The regulators have chosen to add instability," says Chris McHugh, head of CVA trading at HSBC.

That certainly was not the intention, and one Basel Committee sub-group may look at the issue again, according to one international regulator: "We're aware of it. We had heard some concerns in the industry about it, so our team is trying to determine whether there is any interest in revisiting it. But we still haven't got a good feel for that," says one senior regulator. Another regulatory source is more defiant, however: "No-one has presented any real evidence it is happening or – if it is – that it is having a significant impact. Even if it is, it's not a justification for changing the rules," he says.

It depends what counts as evidence, of course – but the Natixis example is just one illustration of the market's fragility. From October 31, 2011 to July 12, 2012, the ABN Amro CDS traded only once, but the bank's spreads saw a peak of 329bp and a trough of 143bp during that period, with the latter coming a day after its CDS was trading at 174bp and a day before it bounced back up to 167bp – a drop of 17.8% followed by a 16.7% jump, without any trades going through.

In mid-2012, Nordea's CDS went 54 trading days in which the contract was executed once, but the spread declined 9% during the period. Nomura's CDS spread fell from 274bp to 231bp in the space of five trading days, starting on November 23 last year – a decline of 16%. There were four trades during that period.

If those three banks had all been using their own CDS spreads to calculate DVA during the above periods, their perceived creditworthiness would be improving in the absence of any real trading activity – purely based on the quotes of market-makers – and they would be reporting losses as a result.

CVA concerns

For CVA, illiquidity for individual contracts poses similar concerns, and there is the additional problem of coverage – there are no CDS contracts on the vast majority of derivatives users. "Most weeks there are between 700 and 900 names trading, yet there will be 2,000 names reported – leaving around 1,200 names that are based on quotes from the investment banks, with no trades behind those numbers. Some of these names hardly ever trade at all," says Kamakura's van Deventer.

In illiquid contracts, sudden spikes in trade frequency appear to result in a change in spreads, but van Deventer warns there is not enough data to analyse the relationship between the two. "The question is: is it wise to base your accounting – let alone capital requirements – on such numbers? I would say no," he argues.

Market-makers – and, possibly, accountants or regulators – may argue the lack of trading volume doesn't matter. IFRS 13 specifies that banks should use a "quoted market price in an active market" – not necessarily the price of the last trade. As long as the various sell-side banks are actually willing to execute at the levels they offer, then a real market exists. And if there are no reliable CDS spreads, both Basel III and IFRS 13 allow the industry to use alternatives.

But from that point on, banks are in uncharted waters. "If you're sitting on a book containing thousands of names, it will always have been a pretty small part that had liquid CDSs – but even this is now shrinking and you will see more names move into the illiquid portfolio. What you do about these names is fairly ill-defined, and there are a variety of approaches across the Street," says Jeremy Vice, head of CVA trading at UniCredit in London.

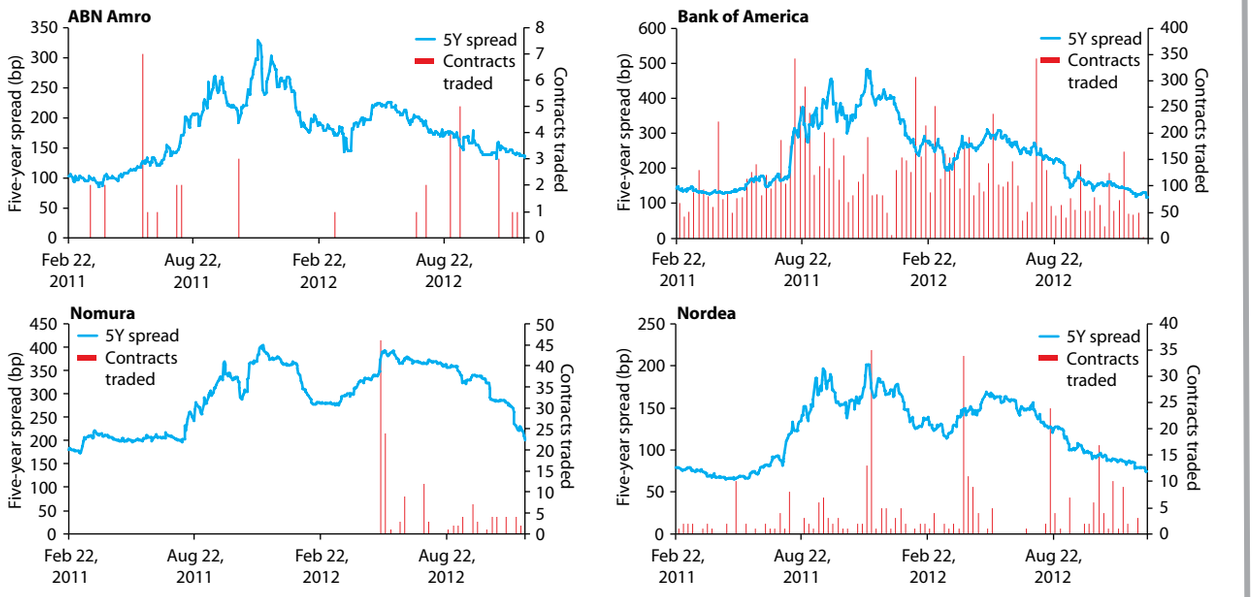
For CVA, accounting rules specify three alternatives when reliable market data on counterparty credit is lacking. Banks can use another suitable asset, generate a proxy spread based on information such as rating, geography and industrial sector – sometimes known as mark-to-matrix – or simply model everything.

The first of these options frequently runs into the same liquidity problems encountered in the CDS market, and the third is a last resort, so banks have been developing different flavours of the mark-to-matrix approach. This might mean that if a liquid spread is not available for a specific German auto supplier, for example, the bank should apply the spread for another, similarly rated German company in the same industrial sector – but the resulting matrix can be quite complex. Using data provider Markit's eight ratings bands, 11 industry sectors and 12 regions generates a matrix with 1,056 cells, for example, many of which still lack a constituent with a liquid CDS spread. Even if a spread is available in the right cell, there is no guarantee that the proxy will be closely correlated with the original name – and while it might satisfy the accountants, it may be difficult to hedge, driving up capital requirements.

"It's the classical proxy story – you can come up with very tiny subsets of names split by geography and sector but it tends to increase a spurious volatility, which can have negative implications for capital," says UniCredit's Vice.

As such, the goal is not always to find another single name – and banks often allow the available hedges to influence the choice of proxy. The most popular hedging instruments are liquid contracts such as indexes and sovereigns, with the latter used in particular for corporates based in that country, or for municipal governments. Genuinely liquid single-name corporates will also be used, too. As an example, Ian Harris, head of CVA trading at Credit Suisse, recalls an occasion on which the desk hedged a European utility with a rival company from a neighbouring country, for

1 Bank CDSs – one liquid name and three illiquid ones



Source: Kamakura, Markit

example, though this was unusual.

These hedging options feed back into the choice of proxy, ensuring a bank is able to mitigate the volatility created when calculating the counterparty exposure. "We tend to mark things as some factor times the high-yield index, so we can hedge. We have a control process with our research guys and back office, but the disagreements are typically over the scale of the multiplier rather than the choice of proxy," says one European bank's head of CVA trading. HSBC's McHugh agrees: "I prefer to have it relative to something I can trade."

So much for objective proxying. But even some liquid curves won't meet regulatory back-testing requirements, dealers say, so another curve – more liquid but less correlated – may need to be selected. In extreme cases, the best option may be a regional sovereign index, or a similarly rated corporate in an entirely different sector – gradually, the proxy is pulled further from the specifics of the underlying risk, increasing the chance that a host of illiquid names end up being mapped to the same liquid one and creating a kind of synthetic concentration of exposure.

The traders' fear of spurious volatility – and the determination of CVA desks not to stray too far from an easy hedge – means modelled approaches try to stay simple, according to Solum Financial's Gregory. It also means the validity of the numbers as measures of actual counterparty risk is undermined. "You can try to do it exactly, and get the closest liquid name, but I think there is a lot of proxying only by rating, or only geography, going on. There's always a lot of subjectivity," he says.

Some banks have been more open about their approach than others. For example, Royal Bank of Scotland uses a loosely mark-to-matrix approach, involving a shuffling of historical data to ensure coherent simulation in the value-at-risk engine that generates the CVA capital number. This methodology was presented last October at a *Risk* conference in London by Dherminder Kainth, the bank's head of the quantitative research centre within group market risk.

Nomura uses what it calls cross-sectional proxying – another mark-to-matrix approach, and an allusion to guidance provided by the European Banking Authority (EBA) in July 2012, which advised banks to use a so-called intersection approach. The EBA method involves separating counterparties into buckets and replacing illiquid names with a proxy derived from the average of spreads for its liquid peers. Nomura sees this as flawed – its cross-sectional proxies are generated on the basis of correlations to fundamental factors, which it argues produces more sensible results (see pages 20–21).

As the EBA example shows, regulators have gone into more detail than accountants when describing what they want to see – but this extra detail has left some dealers confused. As an example, the Basel Committee states a valid CVA proxy should seek to match the region, internal rating and business type of the original counterparty. And while the proxying rules insist on maximum granularity, guidance published by the committee in December warned that a proxy eligible for CVA calculation purposes may not be an eligible hedge for the purposes of capital relief. Banks would only be able to mitigate CVA capital requirements by hedging with an index containing the proxy, and would then also have to model the spread basis between the CVA proxy and the hedge.

That has prompted some head-scratching among dealers. "I find it bizarre. If the index is acceptable as a hedge because it contains the proxy name, why isn't the proxy name itself eligible?" asks the European bank's head of CVA trading.

As an example, he considers a hypothetical exposure to a French corporate that uses the CDS on France as a proxy and is hedged using the sovereign contract. This would not qualify for capital relief and would itself attract capital as a separate position. Only a hedge in Markit's index of European sovereign CDSs – the iTraxx SovX Western Europe – would provide capital relief, he says. By contrast, under IFRS 13, the CVA exposure could be calculated using the sovereign CDS as a proxy and also hedged

with the same contract – resulting in a perfect offset and zero earnings volatility.

The result is a tug-of-war between earnings and capital. The most effective hedge from an earnings perspective will consume additional capital, while the most effective capital relief would mean using an index of 19 European sovereigns to hedge a single French company.

"These kinds of prescriptive rules generally serve to increase volatility. If banks only get capital benefit for index – rather than proxy – hedging, you will see this misalignment between capital management and liquidity. The market will be pushed towards indexes," says UniCredit's Vice.

That would reinforce the existing trend in CDS markets – with single-name volumes dwindling and index volumes growing – and some see this as an unspoken intention. "It's hard to see anything other than a deliberate push away from single names behind this logic. As the business gets more capital-intensive there will be every reason to reduce capital, even if it causes profit and loss volatility," warns Solum Financial's Gregory.

For DVA, the issue initially appears simpler – at least for larger banks that have relatively liquid CDSs – but it quickly becomes complex. Some institutions choose to ignore the earnings volatility created by own-credit effects on liabilities, while others choose to hedge it – five of 19 banks fell into this category in the Ernst & Young survey. For these banks, a disconnection immediately appears – they cannot hedge using the same instrument that drives the DVA, because it would require them to sell protection on themselves. The question of how to create a proxy hedging curve remains.

"We are still pricing our DVA off our CDSs and have no plans to change that – it's still the best indicator of what the spread should be. But it's a massive driver of earnings and not something we can do a huge amount about, so we have to effectively hedge ourselves. A significant amount of thought goes into how we pick the instruments," says the head of CVA trading at a European bank.

These issues are compounded for smaller banks that have not tried to calculate DVA until now – the German landesbanks for instance. In many cases, these institutions have CDSs that trade even less frequently, meaning they need to find an own-credit proxy just to report DVA, as well as for any hedging they choose to do. The technical and modelling challenges are also new. A spokesman for the Deutscher Sparkassen- und Giroverband, which represents the country's public banks, says the issue "is a concern for our members, particularly in the required additional systems and modelling". ■

Decline and fall

In the first half of 2008, total outstanding notional in the single-name credit default swap (CDS) market hit $33.4 trillion – the summit of a roughly decade-long ascent. Since then, it has been shrinking as rapidly as it grew, according to the twice-yearly survey carried out by the Bank for International Settlements. During the first half of last year, notional outstanding reached $15.6 trillion, with much of that concentrated in the 200 or so names that trade $100 million notional or more a week. Of the 1,130 names traded from July 16, 2010 to the end of 2012, almost 70% did so less than once a week (see figure 3).

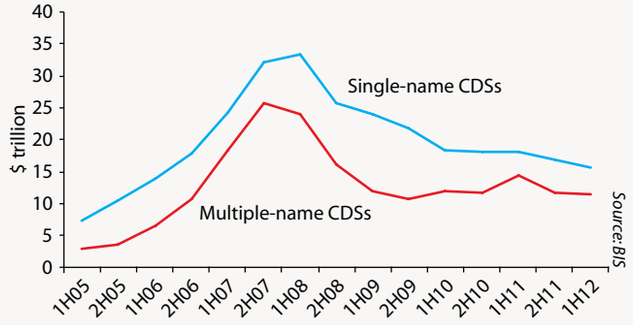
"We've been staring down the barrel of this market for a while. There are a lot of traders – a lot of my traders – sitting here doing nothing," says a senior CDS trader at a North American bank. There are a few reasons for this. One is a general decline in risk aversion – since European Central Bank (ECB) chief Mario Draghi's bald statement in July last year that the ECB would do "whatever it takes" to prevent a break-up of the single currency, eurozone fears have receded. That may prove a temporary respite, but other constraints are more structural than cyclical – pre-crisis correlation trades are maturing or being sold, reducing demand for CDS hedges. Europe has banned so-called naked short positions in sovereign CDSs, meaning the protection has to offset a corresponding long position – which one dealer says has depressed demand for sovereigns by 40%. And Basel III is making certain types of exposure more costly, so dealers are trying to run leaner books comprising standardised, shorter-dated assets that can also be cleared.

Credit Suisse, for example, cut the gross notional size of its flow CDS book by 45% last year by unwinding thousands of positions, roughly halving its one-day value-at-risk to $21 million (*Risk* January 2013, pages 54–55, *www.risk.net/2233322*). Other banks have been through similar work.

One result is that big trades are less easily accommodated. "Bid-offer spreads have been reasonably constant – and low – in recent years, but you've seen a reduction in what you can get done on that. Nowadays a $5 million trade is equivalent to $20 million or $30 million in 2007. The five-year point has always been the most liquid, but there were days last year when the market was only really open for that maturity and for only the most liquid names," says Niall Cameron, global head of credit trading at HSBC.

That does not mean traders are moping around. "Running a CDS book has always been as much about the art of portfolio management as it has about market-making. I don't know why people are that worried about it. It costs more because of Basel III and all the rest of it, but that's the cost of doing business. If they don't want to be in the business, send me the book," says the North American bank's credit trader.

2 Outstanding notional volumes for single- and multiple-name CDSs



3 Infrequent trading of single-name CDSs