

Is Historical Charge-off Volatility ‘Close Enough’?

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A short-cut is always tempting when faced with a thorny problem. Many banks that have recognized the need for a risk-differentiated approach to capital measurement have taken a major short-cut: historical charge-off volatility. As we visit institutions around the US, we often hear risk managers talking about the history of charge-offs in their enterprise as if this offered some sort of guide to the future of loss at their institution. Surely, they argue, the ups and downs of their losses over time offer a pretty good rule of thumb as to the amount of capital the institution should hold?

There’s a short answer to this question: NO. Historical charge-off volatility is a very poor way of gauging a bank’s risk for reasons that are both statistical and ‘practical’.

The first problem is sample size. Mainly because of the pace of mergers over the past 10 years, most banks simply can’t piece together long histories of charge-offs that are relevant to their business today. Volatility estimates taken from as few as 10 data points have a range of error from half to double the ‘true’ volatility.

Some banks paper over this problem by capturing their charge-off history on a quarterly frequency. But quadrupling the sample size just creates the illusion of statistical robustness. Because credit data are so cyclical, the extra data doesn’t really add more information: each year’s quarterly data is very likely to be similar to the annual figure that it replaces.

This relates to a subtle but more potent statistical problem: ‘cycle bias’, which lies at the heart of why we bother to measure risk in the first place. When you measure the standard deviations from just one fragment of a credit cycle, the volatility estimate tends to be quite low. That’s because the real volatility of credit losses comes from moving from one phase of the cycle to another.

The point of risk management is to try to take into account the full set of risks across a range of plausible but ‘unlikely’ scenarios. Does a typical charge-off history cover a full range of scenarios? Probably not – the ‘period’ of the credit cycle is something like seven to 10 years. Most histories will contain only one or two cycles at most, hardly enough observations to gauge the potential amplitude of the cycle.

ERisk has run simulations of 10-year charge-off histories parameterized to behave like real-life charge-offs, and then measured the volatility of each simulated history. The result is a shocking range of volatility estimates, from as low as 30% to as high as 250% of the true volatility of losses.

Even supposing an accurate estimate of loss volatility could be achieved from the charge-off history, what we really want is to

obtain an idea of the shape of the probability distribution of losses. This helps us figure out how far out we need to go to cover the ‘tail’ of the loss distribution, which is the key to the capital question because it encompasses those plausible but ‘unlikely’ events. Available charge-off histories cannot give a meaningful depiction of the shape of the tail, leaving risk managers to guess at the right number of standard deviations (3.3? 5? 8? more?).

With all these statistical problems, trying to discern the size and shape of potential future credit losses from a charge-off history is like trying to guess at the picture of a jigsaw puzzle from just a few pieces that all come from one corner.

Even if we were to have a statistically useful sample of charge-off data, we’d still face the practical problem of knowing whether this sample was representative of the future. History becomes more or less bunk as the portfolio mix changes and new products (with different risk profiles) are added. And, since charge-off histories are usually not available split out by rating, there’s effectively no way to drive capital measurement by rating. This means any risk and capital system based on historical charge-off volatility will be completely insensitive to changes in credit quality.

But while estimates of risk and capital based on historical charge-off volatility can be very misleading, this is a long way from saying that loss histories and their analysis is bunk. A huge amount of information about the future risks of your institution can be extracted from loss histories providing that these histories are related to detailed risk factors such as Probability of Default and Loss Given Default. These are the risk factors that truly drive the likelihood of loss at your institution.

The solution is to use models of credit risk at the portfolio level that can predict both the volatility and the shape of the probability distribution of future losses from the risk factors embedded in your present portfolio. The parameters that feed these models can and should be rooted in history. Only in this way can you achieve a truly robust, forward-looking, useful measure of risk.

Would you try to guess the next sharp turn in the road by looking in your rear-view mirror to see how curvy the road has been? Neither should you rely on historical charge-off volatility to drive your risk and capital measurement system.

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