

## Preparing for Current Expected Credit Loss

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In 2008, following the most recent financial ‘crisis,’ focus turned to forcing higher reserves for credit losses in healthier periods. To do so, regulators have embraced the concept of Expected Loss (“EL”) as a means to recognize the risks in lending portfolios by setting aside loss reserves that would deal with the inherent volatility of credit portfolios.

Under the proposed rules (FASB 825-15), reserves must be set aside in the current year for probable losses in future years extending to the contractual life of the asset. This is in contrast to current accounting rules to set aside reserves when problems become apparent (for example through late payments, covenant breaches, renegotiation requests, Chapter filings, etc.).

EL is a complex calculation even when there is no long-term forecast involved. The probability of default (“PD”) has to be estimated as a numeric value or range; the exposure at default (“EAD”) has to be estimated where the borrower has drawing rights or when the loan amortizes; and the final recovery amount, loss given default (“LGD”), has to be estimated. Not only are these estimations difficult, they have to be backed up by historical performance data before both regulators and auditors can accept them.

Unfortunately, throughout the EL calculation it is all too easy to impose conservatism with the probable, indeed the almost certain outcome being that of inaccuracy.

In order to prevent the possible excesses of conservatism, a financial institution must show facts and data that prove that there are better estimates to use in the EL calculation. These facts and data have one overarching need, they must have historical proof using data with statistically valid sample sizes from several years, including years of an economic downturn.

The challenge is to provide data that will allow a reliable estimate. Realistically, most banks either do not have that data or they do not have enough of it to provide a statistically meaningful answer. Moreover, even if they do have the data, it may not have been collected through a full economic cycle, as required by the proposed rules. Everyone needs a loss database or access to such a database. Keeping good records will bring valuable results.

All too often the law of unintended consequences comes along and bites back. Examples abound in many fields. However in the case of Expected Loss it seems possible that a radical change in accounting, prompted by regulatory rather than commercial pressure, can actually bring some tangible benefits, rather than simply add to the regulatory and administrative burden.

Lenders will be able to recognize the dynamics of the business and, in doing so, prove that the risk is well understood and its inherent volatility better controlled. If this is done well using data and measures that are available, the conversations with accountants and regulators will focus on practical and logical outcomes rather than prescriptive conservatism.

## **Beware of What is Coming....It Might be Useful**

One of the unique features of the U.S. banking system is the relatively enormous number of banks throughout the country. This number has been falling rapidly through mergers as well as financial 'crises,' but there are still thousands more than in most countries. There are giants that are global in scope but the majority remain relatively small and concentrate their energies and capital on serving local communities with most bank services, but in particular retail banking, mortgages and small business lending.

The regulation of banks therefore becomes a complex problem, as regulators have to deal with vast differences in risk, resources and business composition. Regulation and accounting must deal with all types of lenders but gravitates toward the biggest systemic risks, which are the largest and most complex institutions. In doing so, burdens of compliance are imposed on small banks (and other financial institutions) without a great deal of regard for their cost or the resources available for the work.

Over the past 30 years the banking system has been through several 'crises' where hundreds of financial institutions have failed, placing strains on the economy and leading to substantial mistrust by the public as to the safety, soundness and financial strength of these institutions. Evidence of this skepticism can be readily seen in the price/earnings ratios which are stubbornly below firms in industries that might be considered less predictable. Put more starkly, investors do not believe that banks are 'conservative' or 'prudent' but rather that their balance sheets are cyclical time bombs that contain unfathomable risks that will be manifest when the economy changes for the worse.

Since 1988, the regulatory bodies around the world have been attempting (with very little apparent success) to make the system safer by prescribing methods intended to force the banking industry to reduce leverage. The repeated financial problems since that date have revealed flaws in the methods. In 2008, following the most recent 'crisis', focus turned to forcing higher reserves for credit losses in healthier periods. To do so, regulators have embraced the concept of Expected Loss ("EL") as a means to recognize the risks in lending portfolios by setting aside loss reserves that would deal with the inherent volatility of credit portfolios.

Bank accounting rules are of course the purview of the professional accounting bodies and in the U.S. the Financial Accounting Standards Board ("FASB") and abroad the International Accounting Standards Board ("IASB") resolved to take control of these changes while ensuring that the government regulators were in accord. To-date the FASB and the IASB have failed to come up with a single standard, however this document will deal with the FASB as they govern U.S. financial reporting.

## **Expected Loss**

The underlying concept of EL is fundamentally logical and sound. Every loan and irrevocable commitment to lend contains a risk that the borrower may fail to repay some or all of the principal. Most, indeed the vast majority, will repay, but of course we do not know which will not. Thus in every credit portfolio there are losses which have not yet become apparent, but which are statistically inevitable.

We know this, however the accounting rules clearly differ. Reserves against that probability are taken when the problems become apparent (for example through late payments, covenant breaches, renegotiation requests, Chapter filings) and not before. In contrast, EL methods recognize *probable future losses* in *performing* portfolios.

Moving from incurred loss to expected loss will be difficult for the accounting profession. The very long-standing principle has been that revenues and expenses are matched in the period in which they are earned or spent. Next year's costs cannot be brought back to reduce earnings, nor can future revenues be brought back to help an earlier period. EL throws this out of the window (and, incidentally, the FASB toss is much further than the IASB). Under the proposed rules (FASB 825-15), reserves must be set aside in the current year for probable losses in future years extending to the contractual life of the asset. The most radical implication (for accountants) is of course that future events imply forecasts and, as Niels Bohr the nobelist once said "forecasting is difficult, especially the future".

## **Time to Panic?**

EL is a complex calculation even when there is no long-term forecast involved. The probability of default ("PD") has to be estimated as a numeric value or range; the exposure at default ("EAD") has to be estimated where the borrower has drawing rights or when the loan amortizes; and the final recovery amount, loss given default ("LGD"), has to be estimated. Not only are these estimations difficult, they have to be backed up by historical performance data before both regulators and auditors can accept them.

This becomes even more complicated when the loan has a life extending over longer terms, for the possibility of a change in all three categories (PD, EAD, LGD) becomes very high, not to mention issues around guarantees, covenants and changes in macroeconomic conditions. It is no wonder that multiple surveys and comments on the FASB proposals have shown significant anxiety, particularly from the legions of smaller financial institutions.

## **Don't Worry, Be Happy**

There are silver linings. The calculation of EL can bring substantial benefits to those who can use a consistent process backed by good quality data. Here are some of these benefits:

1. Calculating PD will validate your risk assessment process and make risk rating not only potentially more precise but also more valuable in managing and monitoring the loan portfolios.
2. Assessing EAD will probably lead to better and more effective loan structuring particularly in the area of covenants.
3. Guarantees and collateral will become better attuned to the individual borrower and asset.
4. Loan pricing will become less formulaic and more linked to the underlying risk nuances that exist.
5. Client relationships should be improved as the negotiation of loan terms becomes clearer and more evidently fair to the borrower.
6. Earnings volatility should be dampened leading to better relations with shareholders, regulators and analysts.

Of course, reaching this nirvana will not be easy, but there are resources available that can make the task less daunting. Moreover the knowledge gained will be beneficial on multiple levels within the organization.

## **What Could Go Wrong?**

The primary responsibility of regulators is the safety and soundness not only of each institution but, more importantly, the financial system. To that end, regulators will always err on the side of higher reserves, and more capital, for they have no responsibility for the wealth of the shareholders. For auditors, conservatism is programmed; the less the risk of their client failing, the less the risk of being found culpable in its demise. They too lean toward higher reserves for more cushion in case of a fall. But when it comes to the management of the financial institution, there are shareholder and board considerations which means they must strive for as much accuracy as possible without always erring on the conservative side.

Unfortunately, it is all too easy to impose conservatism throughout the EL calculation with the probable, indeed the almost certain outcome being that of inaccuracy. Examples are clear:

1. The PD of a risk rating 'bucket' could be assumed (conservatively) to be at the upper end of the range.

2. The PD could be assumed to be the range that applies at the time of an economic downturn.
3. The EAD could be assumed (conservatively) to be the full amount of the commitment.
4. The benefits of covenants (especially in term loans) to restrict availability during the term of a loan can be assumed to be limited or zero.
5. Recoveries will be negligible whatever the collateral; without collateral all principal will be lost.

A simple example is shown in Figure 1. A one year general business purpose loan in category 3 has a default risk of 1.5%-2.0%. Based on previous history with the client, half of the available funds is expected to be drawn during the life. Covenants are in place protecting against a substantial decline in the current ratio. It is highly unlikely that the borrower could draw more than \$750,000 due to the existence of covenants that protect against a decline in the current ratio. There is no collateral, however the firm has owned real estate and there are no major creditors that are ahead of the bank should a distribution occur.

*Figure 1*

\$1,000,000 Loan Commitment	Most Conservative	Most Conservative	Most Probable	Most Probable
PD	2%		1.5%	
EAD	100% x 2%	\$20,000	75% x 1.5%	\$11,250
LGD	100%	-	50%	\$5,625
Provision		\$20,000		\$5,625

The conservative assumptions lead to a loss reserve that is more than triple the more realistically assessed outcome. Multiply this result over an entire portfolio and it is readily apparent that the implementation of the new rules might produce a massive increase in loss reserves. Indeed commentary from the chair of the FASB, Bloomberg News and many others have suggested that a 50% increase in loss reserves will be an outcome of the new rules.

### **Reaching the Best Result**

In order to prevent the possible excesses of conservatism, a financial institution must show facts and data that prove that there are better estimates to use in the EL calculation. These facts and data have one overarching need, they must have historical proof using data with statistically valid sample sizes from several years, including years of an economic downturn. While this sounds daunting there are actions that can (and should) be taken to establish a sound basis for the EL calculation. For the moment,

consider the base case of a one-year risk because term loans present a new set of problems that will be dealt with later.

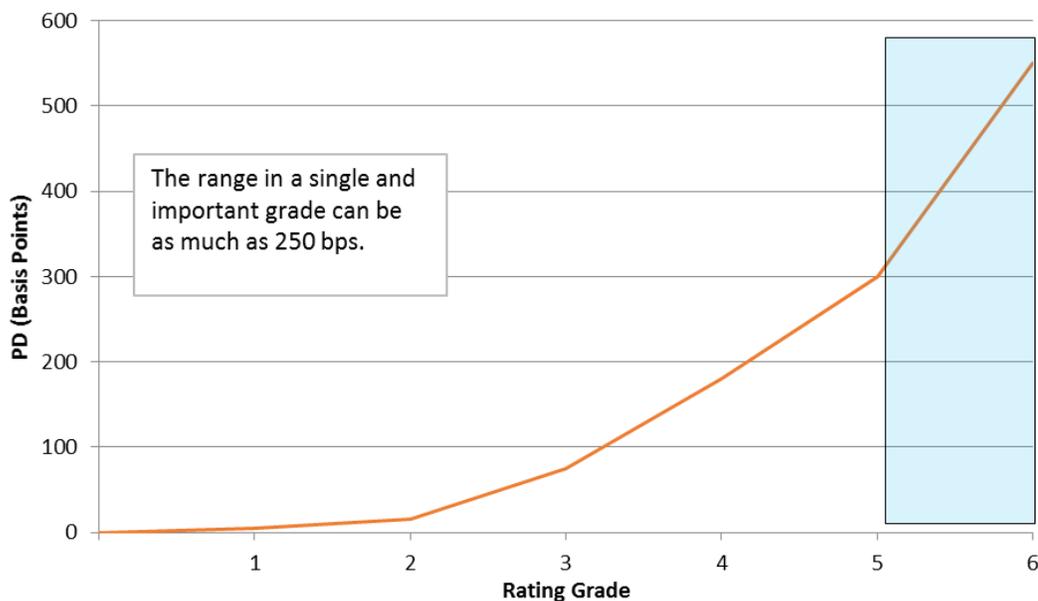
## Probability of Default (PD)

The probability of default is the foundation of all credit analysis of an obligor or business. It is the numeric value of the risk of default.

Every lender carries out a risk assessment of the borrower. For retail bankers, scoring systems have been used for more than half a century and are reliable and backed up by huge amounts of constantly refreshed data. For commercial loans and leases, almost all banks maintain a risk rating scale which in all too many cases is based on regulatory prescription rather than designed for a purpose. Using the most common scale generally means that 40% of the grades are set aside for credits that are or are likely to be in distress. In other words 98% of a normal portfolio has to be placed in only 60% of the grades.

Best practice in this area would be a long dissertation by itself; suffice it to say that any portfolio that contains a broad spectrum of credit risk needs a broad spectrum of grades. Figure 2 illustrates the problem of limited grades. Because the risk curve slopes significantly, a large range of the most common default risk is captured within a single grade which makes risk-responsive pricing difficult to achieve. Additionally, it can lead to adverse selection and a common failure to recognize risk deterioration during the life of the loan.

Figure 2



Determining PD is difficult for the number in most cases lies within a very narrow range and most banks have been more used to ranking credit risk (“a risk 4 is better than a risk 5”) but this will not be enough when CECL is implemented. Fortunately it is not difficult to move to a default rate grouping from a risk ranking, but in order for the new process to be acceptable for audit purposes there will have to be some testing against default experience. This means that the process of change, if needed, needs to begin as soon as possible.

## **Facility versus Entity**

Most lenders work under risk policies that define what will be an acceptable risk (“bankable deal”). Where the borrower is (or may be) outside that range, the facility can be structured to make the deal acceptable. When this takes place the normal (and indeed logical) outcome is that the risks in the portfolio fall into a narrow range or within one or two ‘buckets’. Studies at various times have shown that 60%-80% of all borrowers become risk 3, 4 or 5 (depending on the scale). This is facility rating.

For asset-based lenders, especially leasing companies, this approach makes a great deal of sense, but it is not recommended for commercial banks. The facility rating approach makes it much more difficult to track those borrowers where risk is changing. It is also a problem with commercial borrowers that have more than one line of credit because several PDs for the same borrower can be the result.

Where the facility is the main focus, the key element in the EL calculation turns from the PD to the EAD and, even more, to the probable recovery from realizing the value of the security. A facility rating all too often means that little thought is given to the risk of the underlying borrower post sale. Even for those lenders that focus on the PD, the most common risk assessment method is the “annual review” which is almost always a rote process carried out at the same time of the year and based on information that is at least 3 months old.

## **PD for Asset-Based Lenders**

Leasing operations (both captive and commercial) have a highly tuned focus on the underlying asset. The key calculation at the outset is the value of the asset at the conclusion of the lease, for that is the most important component of the price that will be charged so that the transaction is profitable both through and at the end of the contract. These lenders tend to look at non-retail PD in a much less rigorous fashion than business lenders, for they are protected by security over the asset and a history of being able to recover the asset in the event of the borrower’s inability (or unwillingness) to pay. Nevertheless they need to place each lessee into a risk category (bucket) and

test those buckets to ensure that the frequency of default is as predicted. In other words, over time a risk 4 needs to be consistently less risky than a risk 5 or 6. *Risk ratings or rankings need to be validated.*

## **Volatility is Real**

There are very few businesses that do not have some degree of cyclicality, either through the general economy, through their underlying business or, more frequently, through a combination of both. Where that volatility is positive, the lender has limited joy for while it is likely that the loan will be repaid, it may even be prepaid, thus reducing revenue and perhaps portfolio diversification.

Where the volatility is negative, the risk of principal loss grows, but so often that change is not observed or acted upon in time to make a difference. Waiting for financial data has not worked too well, for it is not only delayed but firmly focused on the past, however recent. There should be no doubt that PD should be monitored using modern tools that are designed to warn about portfolio or account risk changes at the earliest possible time. Using default forecasts derived from PayNet AbsolutePD<sup>®</sup> is but one of several examples of the use of technology to help reduce loss. It is also noteworthy that the cost of these PD assistants is usually paid for with the principal of just one or two of the losses that may be avoided.

## **The Problem of Term**

Perhaps the biggest challenge of the FASB standard will be incorporating the risk changes that take place when a facility has a term longer than one year. Notably, it will be critical to maintain detailed records and make estimates for each term period going forward.

From the regulatory point of view this is understandable, for the statistics show that risk is dynamic and the probability of a risk change through time is very high. One only has to look at the exceptional statistical data on credit risk migration published annually by the rating agencies to see the significance of risk migration. Clearly the issuers covered by the large rating agencies do not reflect the finances of the average commercial loan or lease client, however these statistics are a very useful template for the type and comprehensiveness of the data that will have to be collected and maintained to meet the accounting standard.

Analysis of term loan defaults over a long period shows quite clearly that risk estimates for up to 24 months tend to have good reliability, a reality that crumbles for longer terms. Few methods or practitioners have demonstrated an ability to consistently foresee credit risks past a two-year horizon. Yet the new standard will demand such estimates.

There are several models that attempt to provide estimates of PD, another topic that demands more space than is available here. What should be stated is that retail scoring models have proved that good data can produce consistent, unbiased and valuable measures. For business loans and leases, PayNet AbsolutePD provides default forecasts for a 24 month horizon and can augment traditional methods while bringing the benefits of accessing huge pools of data with a lack of any inbuilt bias.

The danger for all lenders is that the requirement to look at the risks of each deal to the end of its contractual life will produce a significant loss provision as soon as the loan or lease is made. With high levels of migration risk with lower quality borrowers it is entirely possible that the EL will exceed the spread and thus the loan will be booked at a first year loss. Several commentators have suggested that this will discourage term lending, which may well be true. It will certainly overstate the problem, in that any analysis of term loans will show that prepayment, renegotiation, renewal and other events mean that it is highly unlikely that a 60 month commercial loan will reach its contractual term.

All financial institutions will need to focus on collecting term data, but it is probable that internal data alone will be inadequate. Most rating systems and loan monitoring processes tend to move borrower grades with great reluctance, and often only after evidence of deterioration is blindingly obvious. This gives a false impression of volatility and makes early action more unlikely. PD models are not only valuable for the initial assessment of risk (even as a validation of the judgment-based process) but they may also prove invaluable in building sound and unbiased migration information that can be used to move the accountants and regulators to accept more probable outcomes.

### **Exposure at Default (“EAD”)**

Assume that a credit facility is granted for general business purposes, perhaps the most common type of loan facility. There will be hundreds, perhaps thousands of clients who have what is essentially an option on the lender’s balance sheet. EL requires an estimate, at the time a facility is granted, of the extent to which the facility will have been used should default occur. It requires a forecast.

The obvious (conservative!) answer is that all available credit will have been accessed at the time of default. After all, firms in trouble tend to bleed cash which needs to be replaced to keep the business afloat. While such an answer seems reasonable, we know it to be wrong. The challenge is to provide data that will allow a better estimate, a more probable scenario. Realistically, most banks either do not have that data or they do not have enough of it to provide a statistically meaningful answer. Moreover, even if they do have the data, it may not have been collected through a full economic cycle, as required by the proposed rules.

If the value of a leased asset declines in accordance with predicted outcomes, then the timing of a default should have little impact, as an earlier loss should be offset by a higher recovery amount. However defaults for asset-based lenders can pose particular problems as terminal values are based on 'normal' clients who tend to make predictable use of the assets, maintain them and insure them. Defaulting assets can be abused, damaged and difficult to sell (often due to the economic conditions that can precipitate an increase in business failure) and so the exposure at default may vary depending upon the probable time to default and the state of the economy.

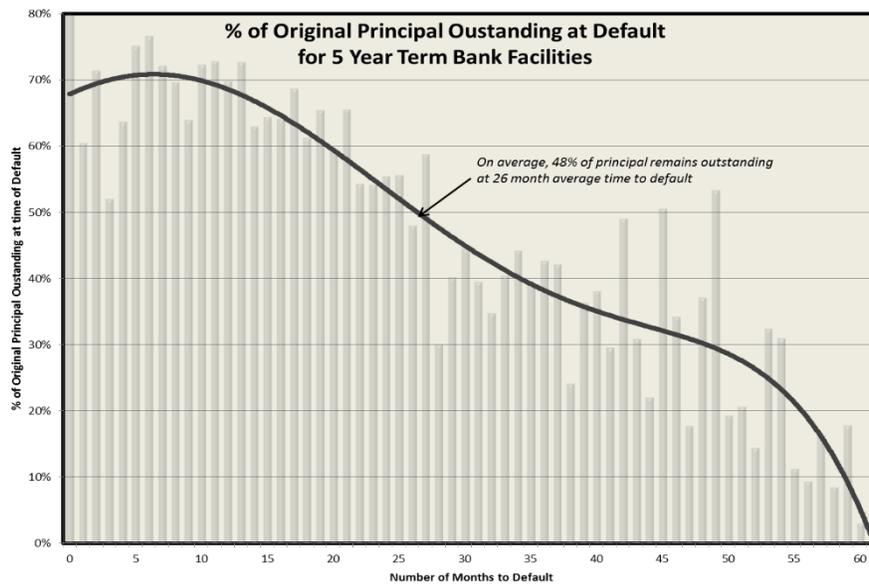
A comprehensive database of losses, which includes the timing of defaults relative to the initial advance, will show whether recovery levels versus the amount remaining on the lease vary to any degree, and then whether the difference can be recovered from the lessee.

### **Amortizing Loans and Leases**

The EAD problem can be seen in an almost pure form with an amortizing loan or lease. The most conservative position is that the borrower defaults before making the first payment of principal and interest. The least conservative is that the borrower makes every payment except the last. Obviously both are highly unlikely, but what is the most probable outcome and what is the range around that probability?

To answer that question you need to look at thousands of examples of defaulted amortizing loans at various original terms to see the distribution of outcomes. You need a huge database that stretches through at least one economic cycle and contains multiple borrowers to avoid lender biases, such as the PayNet Loss Database, to produce Figure 3 which shows with a sample size of 18,000 observations over 15 years that the mean exposure at default was 48% of principal. This can be repeated for sub-portfolios such as construction equipment, medical equipment, trucks, computers and more, but the point is clear.

Figure 3



## Loss Given Default (“LGD”)

Consider the financing arm of a major firm that produces construction equipment. Over a long period of time, they have leased or sold the parent’s products to thousands of businesses big and small. Each lease uses a highly refined process to measure the value of their security throughout the lease. As defaults occur over time, they accrue a track record of repossession and eventual loss covering multiple events through multiple economic environments spanning multiple geographies. For this firm and many other leasing companies the calculation of LGD is a science derived from and supported by data.

Now consider a bank lending to a dairy producing milk, cheese, yoghurt etc. What happens if this loan defaults? It is entirely possible that they have no other instances or recent instances from which to draw experience. The collateral, if any, is perishable, the market for used dairy equipment probably sparse. Public records might point to Parmalat (a large dairy company default with perhaps the same NAICS code), but the facts in this case involved significant insider fraud and are therefore of little or no use. Nevertheless, to calculate EL, an estimate has to be made.

The conservative assumption of 100% LGD on a loan may be realistic. However if that is repeated over all risks where there is limited or no data on previous examples, the EL for the portfolio will be significantly overstated. Clearly what the aforementioned finance firm has is what all lenders need. But most commercial lenders do not have this data. Even if they have maintained excellent records of their own loss experience, the sample size of most business types will be inadequate for audit purposes. They need

access to data that can provide the depth needed to persuade auditors and regulators of the most probable outcomes.

## **The Importance of Multi-Period Loss Data**

PayNet has a very deep database containing more than 750,000 defaults over more than 17 years. They have data that arguably covers two economic cycles and data that comes from both asset-based and commercial lenders. Figure 3 earlier was an example of the sheer size (and usefulness) of this data, but it can also answer questions on recovery levels, time to default, the value of third party guarantees, the effect of time in business and much, much more. It is a researcher's dream for the number of interesting questions is limited only by imagination. But the important message here is that good EL calculations need a very large pool of good quality data if they are to be realistic and accepted by third parties including regulators and auditors.

Everyone needs a loss database or access to such a database. Keeping good records will bring valuable results. As the Chinese proverb states; "the best time to plant a tree was 20 years ago, the next best time is tomorrow".

Before leaving the topic of a loss database, there are some further important advantages that should be noted:

1. A loss database is the tool that will provide data on exposure at default for most types of loans and all types of leases. As noted earlier this is probably the area where over-conservatism might produce the most damage.
2. A deep database will provide insight into the value of structural elements and enable those elements to be priced consistently. Moreover the connection between structure and price should allow for better negotiations and client understanding.

## **Toward Better Measurement**

All too often the law of unintended consequences comes along and bites back. Examples abound in many fields. However in this case it seems possible that a radical change in accounting, prompted by regulatory rather than commercial pressure, can actually bring some tangible benefits, rather than simply add to the regulatory and administrative burden.

Saying this is not to make light of the challenges that will arise from these complex and far-reaching changes. For most financial institutions the new rules will add yet another layer of data and complexity in an already challenging area. But this is the area where we know that the bulk of the risk resides, unseen through past accounting conventions. Lenders understand that a small percentage of the portfolio is not performing, is late or

has sought creditor protection. They devote a lot of resources (and costs) to deal with these problems and carefully set aside what is needed to deal with these problems.

Yet they also understand that the other 98%+ of the portfolio has probable failures which cannot yet be seen nor accounted for due to the annoying convention of historical cost accounting. The new rules will make positive action a sanctioned virtue.

Lenders will be able to recognize the dynamics of the business and, in doing so, prove that the risk is well understood and its inherent volatility better controlled. If this is done well using data and measures that are available, the conversations with accountants and regulators will focus on practical and logical outcomes rather than prescriptive conservatism. This time the light at the end of the tunnel may be a way through rather than a train heading in our direction.