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Financial Instruments: Impairment

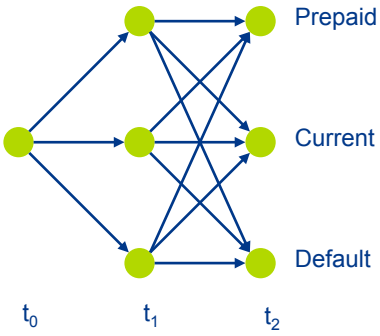
Adapting to change

The building blocks

A new measurement philosophy

The change from the incurred to the expected loss methodology for measuring impairment represents a fundamental shift:

- The drivers of impairment (namely, credit losses) will have to be assessed over the full expected life of an instrument. Previously the time frames for measurement were much shorter, as only incurred losses were considered.
- It also increases the need to measure accurately the expected life of an instrument (incorporating payment behaviour), as this may materially affect the period over which an instrument is exposed to credit risk.
- This will almost certainly require a fundamental change to the operating model.
- The adoption of the "open portfolio approach" facilitates easy application of the parameters to the balance sheet without the need for granular impairment calculations.
- It makes the estimation of impairment more subjective particularly relating to estimates of how cash flows are likely to respond to the economic cycle.
- The increase in subjectivity regarding longer term credit estimates makes the need for a robust governance process essential.



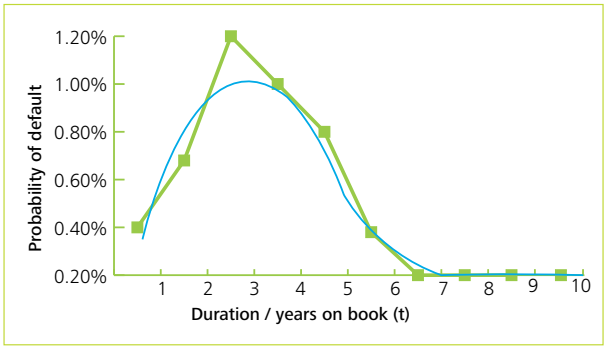
Tracking credit states through a transition matrix

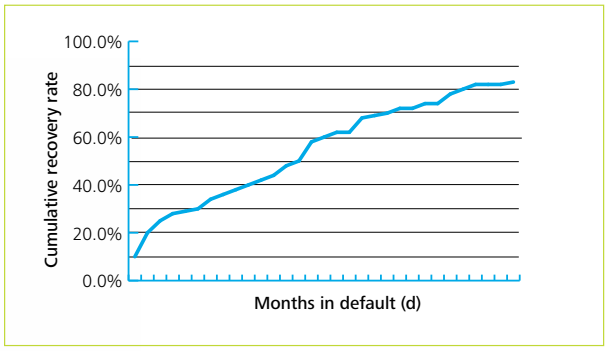
Over its life, a financial instrument will evolve over any number of states:

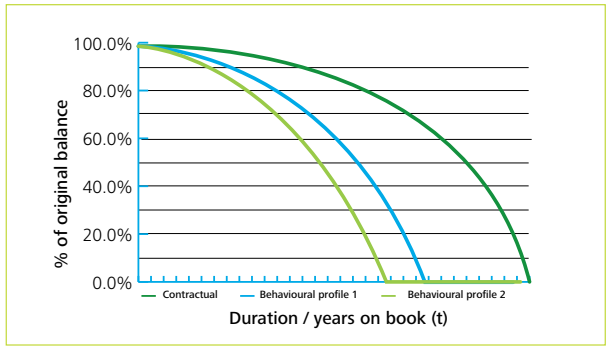
- This evolution is captured in a transition matrix.
- The transition or roll rate matrix below is derived as a pivot table from the master data suite. It shows that if all the customers start t_0 in the Current state, 83% remain in that category at t_1, while 2% have prepaid, and 10% and 5% have moved to 30 and 60 days in arrears respectively.
- The change in distribution in t_2 is determined by multiplying the new t_1 distribution through the roll rate matrix, and so on.

Start\End	Current	Early Settlement	30 days in arrears	60 days in arrears	Default	Total
Current	83%	2%	10%	5%	0%	100%
Early Settlement	0%	100%	0%	0%	0%	100%
30 days in arrears	20%	0%	30%	45%	5%	100%
60 days in arrears	15%	5%	20%	40%	20%	100%
Default	0%	0%	0%	0%	100%	100%

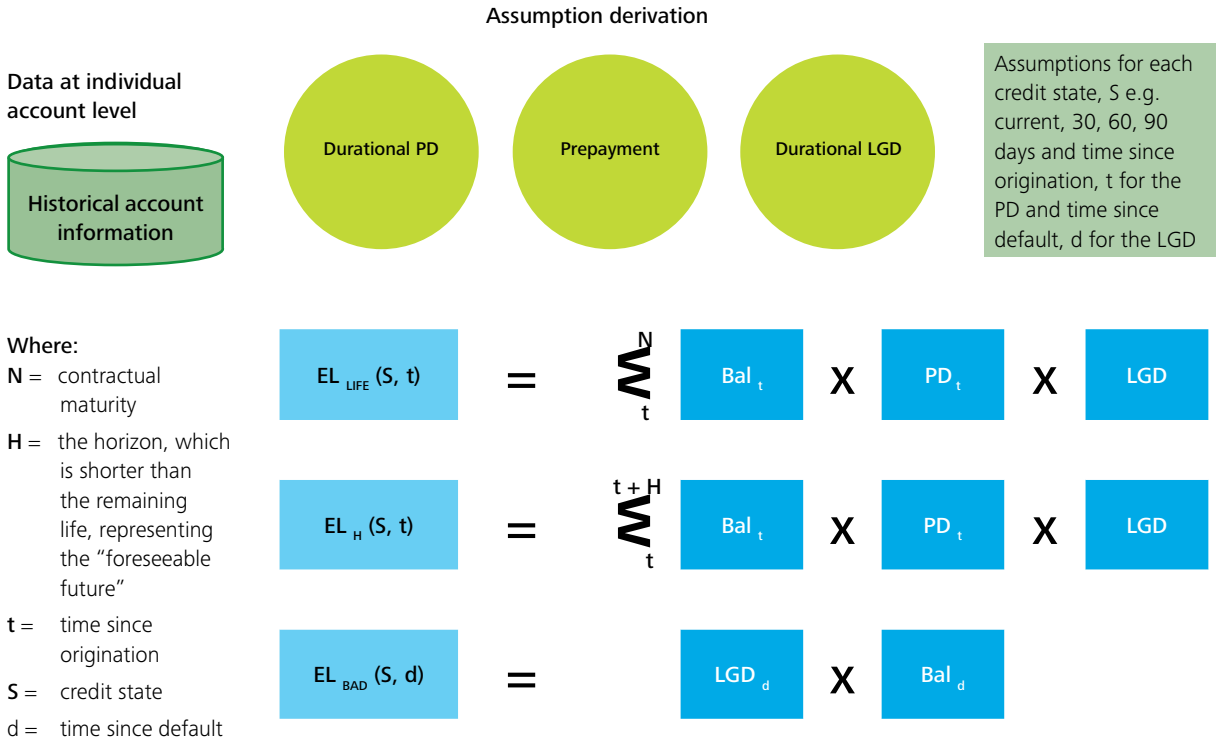
Key inputs into the impairment calculation		
Probability of default	**Loss given default**	**Prepayment**
The distribution between states within a transition matrix is used to derive the probability of default (PD) of the portfolio for each time, t. PDs typically have a shape. The example below is typical of home loans. PDs peak after 18 months to 2 years, and then fall away sharply. The decrease usually stems from the fact that the house value has increased at this point to such an extent that the borrower can sell himself out of trouble. Reducing the default rate will reduce the amount of the impairment.	Once in default, the effectiveness of the entity's collections and recoveries process determines the recovery profile and ultimate loss associated with the instrument. Collections and recoveries performance is usually expressed in terms of a recoveries curve, reflecting the amount collected in each period, d, since default. The loss given default (LGD) represents 1 – (the value of recoveries discounted to the point of default). Accelerating the collection of arrears or increasing the amount of collections will reduce the amount of the impairment.	A change in prepayment assumptions does not directly impact the amount of impairment. However it indirectly influences impairment through lengthening or shortening the period over which an instrument is exposed to credit risk. All other things being equal, a portfolio whose duration shortens through an increase in prepayments should reflect a reduction in impairments, and vice versa.



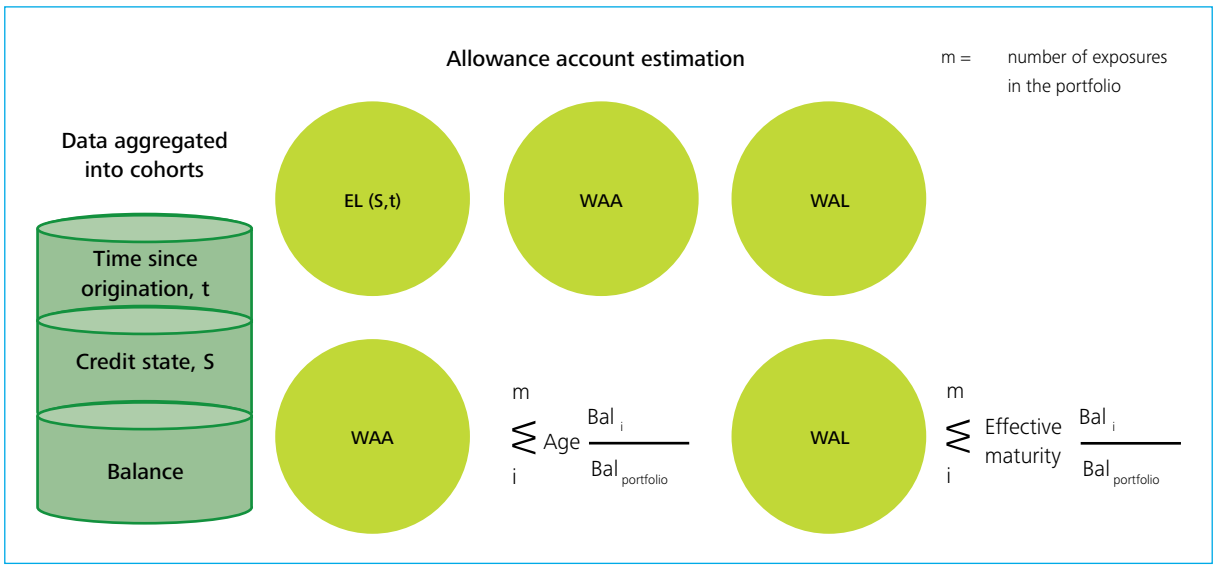




The impairment framework for instruments that are assessed collectively



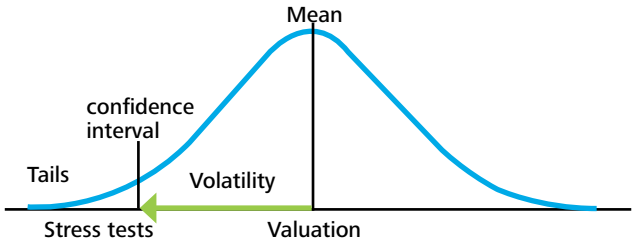
For the bad book, the PD =1, and thus the EL is the current balance multiplied by the LGD. For loans that have been in default for some time, a durational LGD_d is more appropriate, to reflect post-default recoveries that have already been collected and reflected in the balance outstanding.



Key questions for management

- Do we **understand** the requirements of the standard?
- What are the key areas of **judgement**?
- What are the main **operating model changes** likely to be?
- Given that we will revisit our models, how can we harness change to improve our modelling **efficiency**, or to provide **value-add** out of our modelling processes?
- What enhancements to our **governance model** are required?
  - Should we institute a formal model **validation process** akin to the way we validate models for regulatory capital purposes?
  - Should we institute a formal **assumptions committee** to approve the assumptions themselves, specifically any economic cycle adjustments?
- How should we **communicate** the change and its impact, both internally and externally?

LGD and the alignment with Basel II parameters



Whilst accounting seeks to address the mean, or expected value, the Basel II capital requirement seeks to address volatility, or unexpected loss.

The bank should consider using the expected LGD for accounting, rather than the Basel II downturn LGD.

Introducing discounting

The decision to discount is elective. Discounting may benefit the bank where the term structure of EL is long. Where losses emerge early, the cost benefit considerations mean that discounting may not deliver clear benefit

$$EL_{LIFE}(S, t) = \left[\sum_{t}^{N} (1+i)^{t} \times Bal_{t} \times PD_{t} \times LGD \times (1+i)^{-t-1} \right]$$

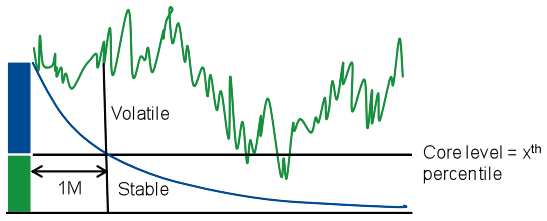
Risk free rate ≤ i ≤ effective interest rate

Bal_t of a revolving portfolio

Determining the projected balance of an open portfolio of revolving facilities is complex, as projections of future balance, Bal_t, should avoid inclusion of new accounts, and future draws on existing facilities. Their inclusion will overstate the allowance account.

There are various established methods to model revolving facilities. The bank could model a "stable" and "volatile" component, and make different run-off assumptions for each component, which is an approach commonly used to model the liquidity term structure of revolving deposits.

The policy that management elects is likely to have a significant impact on the modelling result.



Overview of the supplement to ED/2009/12

The rationale for change

- Following the crisis, the incurred loss model has been criticised for contributing to **procyclicality**. Under the incurred loss model, impairment levels tended to be lowest just before the credit cycle's turn. As losses mounted, significant increases in impairment levels were required. This put additional pressure on banks' financial resources at their weakest point. The proposed expected loss approach will require the recognition of the **lifetime expected loss (EL $_{LIFE}$)** of an advance on a **time proportional basis.**
- To ensure that portfolios where losses emerge early in their lifecycle are adequately impaired in advance of the loss being realised, the impairment level is subject to a **minimum floor**. The floor is set at the level of the loss expected to emerge over the **foreseeable future**. In the notation that follows, we have described this period as the **Horizon, *H.***
- For an open portfolio, the proposed impairment level is relatively **stable as new loans replace old**. Impairment levels will likely change due to change in portfolio size, change in credit quality or change in aging and/or payment behaviour.
- Impairment levels for the performing book will likely increase and are expected to align more closely with the Expected Loss (EL) under Basel II. Banks that apply the Advanced IRB for credit risk should experience **capital relief**, through a significant reduction in the deduction from eligible capital of the shortfall between impairment and the Basel II EL. Note that the initial change in impairment levels will likely go through balance sheet restatement rather than through the income statement.

The impairment balance

For the "good book"

Segmentation	Calculations of parameters and the allowance account will typically be segmented to reflect different credit statuses, S, (e.g. current, arrears, default) and time since origination, t.
Frequency	Credit and behavioural assumptions should be refreshed at each reporting date.
Time proportionality	Time proportionality is reflected by the ratio of the weighted average age of the portfolio (WAA) to its weighted average life (WAL). For a stable portfolio, the income statement charge for impairment will be driven by changes in credit parameters and portfolio mix, rather than by time effects.

$$\text{Allowance account} = \max\left[EL_{LIFE}(S,t) \times \frac{WAA}{WAL}, EL_{H}(S,t) \right]$$

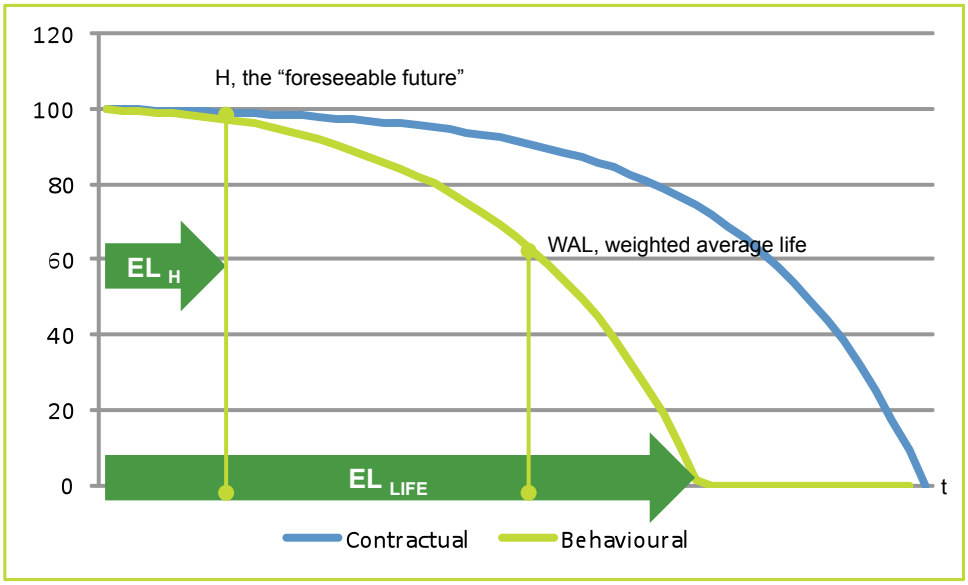
Time proportional amount — Floor

For the "bad book"

$$\text{Allowance account} = EL_{BAD}(S,d)$$

- The full amount of the EL on the bad book is recognised in the allowance account immediately.
- The EL_{BAD} typically reflects the durational LGD, which depends on the length of time the advance has already been in default, d.

EL_{LIFE}, EL_{H} and WAL



The EL_{LIFE} and the portfolio balance at any time since origination, *t*, are dependent on the portfolio's behavioural profile.

The behavioural profile, WAA and WAL should be re-estimated periodically.

The open portfolio

- As a concession to the complexity of calculating impairment at a granular level, the proposal has introduced the concept of the open portfolio.
- Credit parameters can be applied to the portfolio balance rather than to individual advances. To ensure an accurate estimate, the portfolio should be segmented by credit state and time since origination.

Allowance account (S, t)	=	$EL\%_{LIFE}$ (S, t)	X	Bal (S, t)	X	WAA	÷	WAL

- The time proportion factor, WAA / WAL, attempts to replicate the use of the effective interest rate (EIR), in order to match impairment with interest income from lending activities. The use of the portfolio-level characteristics captured in the WAA / WAL factor means that the bank does not need to calculate and capture the EIR at a granular level. This significantly reduces operational complexity and is referred to as a decoupled approach in the literature.

"Good" versus "bad"

The "good" and "bad" definitions should follow the bank's internal risk management processes. Alternatively, when the value of expected losses is expected to exceed the credit risk premium, then a loan should be classified as bad.

The definition directly impacts the **timing of loss recognition** (immediate versus time proportional).

We support **alignment with regulatory "default" definition** to maximise alignment with Basel II EL measures, and to avoid unintended capital consequences.

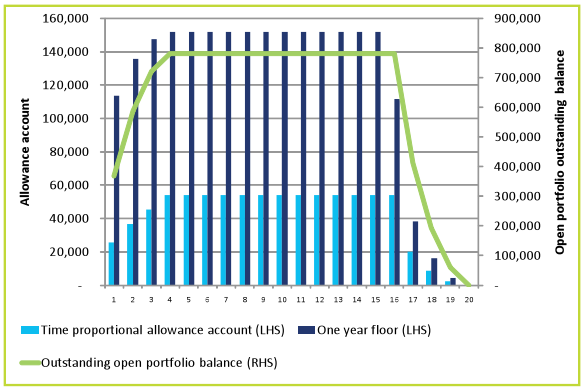
The horizon, H

The floor represents the "foreseeable future" over which loss estimates are reliably estimable and may not be less than twelve months. Differing horizons may negatively affect comparability between banks.

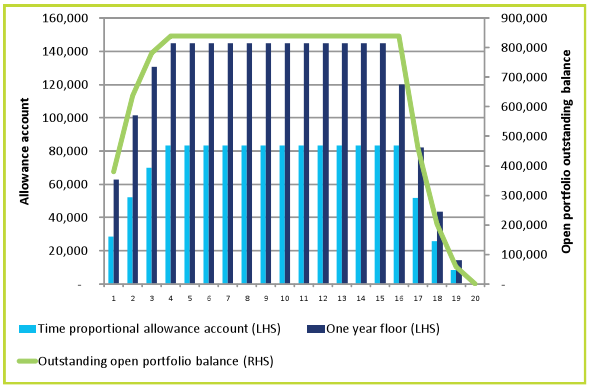
The Exposure Draft in practice

We have created a hypothetical stable portfolio to assess the impact of the time proportional allowance account (based on the lifetime EL) versus the floor (based on the full EL over the Horizon, H). For the purposes of this illustration, we have assumed that H is one year. The following graphs reflect the results of a variety of assumptions about the portfolio's loss emergence pattern.

PD_t significantly front-end loaded (early emergence)



PD_t significantly back-end loaded (late emergence)

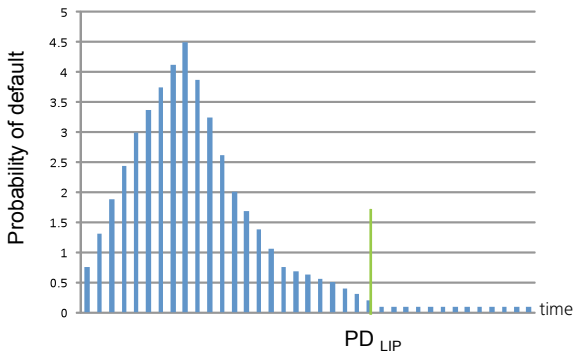


In all instances, the floor exceeds the time proportional allowance account. This effect is even more pronounced where H > one year.

This indicates that the allowance account may be approximated by EL_H in many circumstances.

Performing portfolio = EL_H (Performing)

Arrears portfolio = EL_{LIP} (Arrears) + EL_H (Performing)



Default portfolio = EL_{LIFE} (Default)

Quantitative impact

For the Performing portfolio, the proposals represent a significant increase over the current IBNR provision, and will constitute the bulk of the additional impairment required.

For the Arrears portfolio, most banks currently provide on the basis of the EL_{LIP}.

This means that they provide for the abnormally high losses expected over the LIP period. Borrowers who have not defaulted within the LIP period typically return to the Performing portfolio.

We have suggested a conservative add-on to the EL_{LIP} to reflect losses over the Horizon for advances that survive the LIP period.

Treatment of the default portfolio remains relatively unchanged although some flexibility around the discount rate has been introduced.

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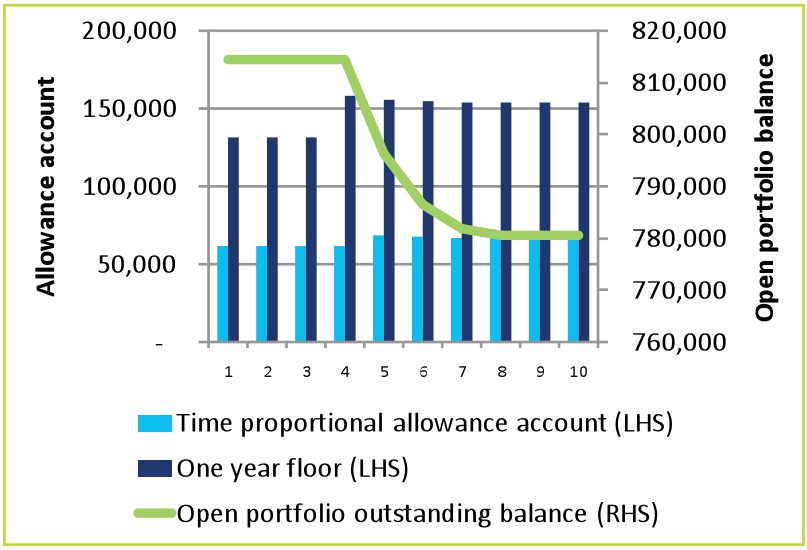
Operating model consequences	
No need for roll rates / transition matrix	PD_H and PD_{LIP} can be measured directly, without the need to calculate the PD for each duration, t.
No need for prepayment modelling	On the basis of the above method of PD estimation, and the fact that the WAA and WAL factors are ignored, there is no need to model prepayments.
No need for discounting	The horizons H and LIP tend to be short, so the discounting benefit is significantly less than discounting over the full life.

Impact of a change in estimate

The use of the floor continues to hold where a change in EL estimate occurs.



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