

## Appendix D – Illustrative examples

*This appendix is illustrative only and does not form part of this Standard. The purpose of this appendix is to illustrate the application of this Standard and to assist in clarifying its meaning.*

### Financial liabilities at fair value through surplus or deficit

- D1. The following example illustrates the calculation that an entity might perform in accordance with paragraph AG5.132 of this Standard.
- D2. On 1 July 20X1 an entity issues a 10-year bond with a par value of R150 000 and an annual fixed coupon rate of 8 per cent, which is consistent with market rates for bonds with similar characteristics.
- D3. The entity uses JIBAR as its observable (benchmark) interest rate. At the date of inception of the bond, JIBAR is 5 per cent. At the end of the first year:
- JIBAR has decreased to 4.75 per cent.
  - The entity assumes a flat yield curve, all changes in interest rates result from a parallel shift in the yield curve, and the changes in JIBAR are the only relevant changes in market conditions.
- D4. The fair value for the bond is R153 811, consistent with an interest rate of 7.6 per cent<sup>1</sup>.
- D5. The entity estimates the amount of change in the fair value of the bond that is not attributable to changes in market conditions that give rise to market risk as follows:

<p>[paragraph AG5.132(a) ]</p> <p>First, the entity computes the liability's internal rate of return at the start of the period using the observed market price of the liability and the liability's contractual cash flows at the start of the period. It deducts from this rate of return the observed (benchmark) interest rate at the start of the period, to arrive at an instrument-specific component of the internal rate of return.</p>	<p>At the start of the period of a 10-year bond with a coupon of 8 per cent, the bond's internal rate of return is 8 per cent.</p> <p>Because the observed (benchmark) interest rate (JIBAR) is 5 per cent, the instrument-specific component of the internal rate of return is 3 per cent.</p>
<p>[paragraph AG5.132(b)]</p> <p>Next, the entity calculates the present value of the cash flows associated with the</p>	<p>The contractual cash flows of the instrument at the end of the period are:</p> <p>interest: R12 000<sup>2</sup> per year for each of years 2–</p>

<sup>1</sup> This reflects a shift in JIBAR from 5 per cent to 4.75 percent and a movement on 0.15 per cent which, in the absence of other relevant changes in market conditions, is assumed to reflect changes in credit risk of the instrument.

<p>liability using the liability's contractual cash flows at the end of the period and a discount rate equal to the sum of (i) the observed (benchmark) interest rate at the end of the period and (ii) the instrument-specific component of the internal rate of return as determined in accordance with paragraph AG5.132(a).</p>	<p>10. principal: R150 000 in year 10. The discount rate to be used to calculate the present value of the bond is thus 7.75 per cent, which is the end of period JIBAR rate of 4.75 per cent, plus the 3 per cent instrument-specific component. This gives a present value of R152 367<sup>3</sup>.</p>
<p>[paragraph AG5.132(c) ] The difference between the observed market price of the liability at the end of the period and the amount determined in accordance with paragraph AG5.132(b) is the change in fair value that is not attributable to changes in the observed (benchmark) interest rate. This is the amount to be presented in the statement of changes in net assets in accordance with paragraph 5.44(a) .</p>	<p>The market price of the liability at the end of the period is R153 811<sup>4</sup>. Thus, the entity presents R1 444 in the statement of changes in net assets, which is R153 811 – R152 367, as the increase in fair value of the bond that is not attributable to changes in market conditions that give rise to market risk.</p>

## Impairment

### Assessing significant increases in credit risk since initial recognition

D6. The following examples illustrate possible ways to assess whether there have been significant increases in credit risk since initial recognition. For simplicity of illustration, the following examples only show one aspect of the credit risk analysis. However, the assessment of whether lifetime expected credit losses should be recognised is a multifactor and holistic analysis that considers reasonable and supportable information that is available without undue cost or effort and that is relevant for the particular financial instrument being assessed.

#### Example 1—significant increase in credit risk

D7. Company Y has a funding structure that includes a senior secured loan facility with different tranches<sup>5</sup>. Technology Agency X provides a tranche of that loan facility to Company Y. At the time of origination of the loan by Technology Agency X, although Company Y's leverage was relatively high compared with other issuers with similar

<sup>2</sup> R150 000 X 8% = R12 000.

<sup>3</sup>  $PV = [R12\,000 \times (1 - (1 + 0.0755)^{-9} / 0.0755)] + R150\,000 \times (1 + 0.0755)^{-9}$

<sup>4</sup> Market price =  $[R12,000 \times (1 - (1 + 0.076)^{-9} / 0.076)] + R150,000 \times (1 + 0.076)^{-9}$

<sup>5</sup> The security of the loan affects the loss that would be realised if a default occurs, but does not affect the risk of default occurring, so it is not considered when determining whether there has been a significant increase in credit risk since initial recognition as required by paragraph 5.18 of this Standard.

credit risk, it was expected that Company Y would be able to meet the covenants for the life of the instrument. In addition, the generation of revenue and cash flow was expected to be stable in Company Y's industry over the term of the senior facility. However, there was some business risk related to the ability to grow gross margins within its existing businesses.

- D8. At initial recognition, because of the considerations outlined in D7, Technology Agency X considers that despite the level of credit risk at initial recognition, the loan is not an originated credit-impaired loan because it does not meet the definition of a credit-impaired financial asset.
- D9. Subsequent to initial recognition, macroeconomic changes have had a negative effect on total sales volume and Company Y has underperformed on its business plan for revenue generation and net cash flow generation. Although spending on inventory has increased, anticipated sales have not materialised. To increase liquidity, Company Y has drawn down more on a separate revolving credit facility, thereby increasing its leverage ratio. Consequently, Company Y is now close to breaching its covenants on the senior secured loan facility with Technology Agency X.
- D10. Technology Agency X makes an overall assessment of the credit risk on the loan to Company Y at the reporting date by taking into consideration all reasonable and supportable information that is available without undue cost or effort and that is relevant for assessing the extent of the increase in credit risk since initial recognition. This may include factors such as:
- (a) Agency X's expectation that the deterioration in the macroeconomic environment may continue in the near future, which is expected to have a further negative impact on Company Y's ability to generate cash flows and to deleverage.
  - (b) Company Y is closer to breaching its covenants, which may result in a need to restructure the loan or reset the covenants.
  - (c) Agency X's assessment that the credit margin on newly originated loans have increased reflecting the increase in credit risk, and that these changes are not explained by changes in the market environment (for example, benchmark interest rates have remained unchanged). A further comparison with the pricing of Company Y's peers shows that increases in credit margin on its loans have probably been caused by company-specific factors.
- D11. Technology Agency X has reassessed its internal risk grading of the loan on the basis of the information that it has available to reflect the increase in credit risk.
- D12. Technology Agency X determines that there has been a significant increase in credit risk since initial recognition of the loan in accordance with. Consequently, Technology Agency X recognises lifetime expected credit losses on its senior secured loan to Company Y. Even if Technology Agency X has not yet changed the internal risk grading of the loan it could still reach this conclusion—the absence or presence of a

change in risk grading in itself is not determinative of whether credit risk has increased significantly since initial recognition.

**Example 2—no significant increase in credit risk**

- D13. Utility C, is the holding company of an economic entity that provides energy to the public and private sector. Energy provision is cyclical in nature. Government provided a loan to Utility C. At that time, the prospects for the industry were positive, because of expectations of further increases in demand. However, input prices were volatile and given the point in the cycle, a potential decrease in sales was anticipated.
- D14. In addition, in the past Utility C has been focused on reducing input costs and maintaining a stable supply of resources, and has acquired majority stakes in strategic sectors. As a result, the group structure is complex and has been subject to change, making it difficult for investors to analyse the expected performance of the group and to forecast the cash that will be available at the controlling entity-level. Even though leverage is at a level that is considered acceptable by Utility C's creditors at the time that Government originates the loan, its creditors are concerned about Utility C's ability to refinance its debt because of the short remaining life until the maturity of the current financing. There is also concern about Utility C's ability to continue to service interest using the dividends it receives from its controlling entities.
- D15. At the time of the origination of the loan by Government, utility C's leverage was in line with that of other utilities with similar credit risk and based on projections over the expected life of the loan, the available capacity (i.e. headroom) on its coverage ratios before triggering a default event, was high. Government applies its own internal rating methods to determine credit risk and allocates a specific internal rating score to its loans. Government internal rating categories are based on historical, current and forward-looking information and reflect the credit risk for the tenor of the loans. On initial recognition, Government determines that the loan is subject to considerable credit risk, has speculative elements and that the uncertainties affecting Utility C, including the economic entity's uncertain prospects for cash generation, could lead to default. However, Government does not consider the loan to be originated credit-impaired because it does not meet the definition of a purchased or originated credit-impaired financial asset.
- D16. Subsequent to initial recognition, Utility C has announced that three of its five key controlled entities had a significant reduction in sales volume because of deteriorated market conditions but sales volumes are expected to improve in line with the anticipated cycle for the industry in the following months. The sales of the other two controlled entities were stable. Utility C has also announced a corporate restructure to streamline its operating controlled entities. This restructuring will increase the flexibility to refinance existing debt and the ability of the operating subsidiaries to pay dividends to Utility C.

- D17. Despite the expected continuing deterioration in market conditions, Government determines, in accordance with paragraph 5.18, that there has not been a significant increase in the credit risk on the loan to Utility C since initial recognition. This is demonstrated by factors that include:
- (a) Although current sale volumes have fallen, this was as anticipated by Government at initial recognition. Furthermore, sales volumes are expected to improve, in the following months.
  - (b) Given the increased flexibility to refinance the existing debt at the operating subsidiary level and the increased availability of dividends to Utility, Government views the corporate restructure as being credit enhancing. This is despite some continued concern about the ability to refinance the existing debt at the controlled entity level.
  - (c) Government's credit risk department, which monitors Utility C, has determined that the latest developments are not significant enough to justify a change in its internal credit risk rating.
- D18. As a consequence, Government does not recognise a loss allowance at an amount equal to lifetime expected credit losses on the loan. However, it updates its measurement of the 12-month expected credit losses for the increased risk of a default occurring in the next 12 months and for current expectations of the credit losses that would arise if a default were to occur.

**Example 3—highly collateralised financial asset**

- D19. Housing Company H owns rental properties which are financed by a five-year loan from Municipality Z with a loan-to-value (LTV) ratio of 50 per cent. The loan is secured by a first-ranking security over the properties. At initial recognition of the loan, Municipality Z does not consider the loan to be originated credit-impaired as defined.
- D20. Subsequent to initial recognition, the revenues of Housing Company H have decreased because of an economic recession. Furthermore, expected increases in regulations have the potential to further negatively affect revenue. These negative effects on Housing Company H's operations could be significant and ongoing.
- D21. As a result of these recent events and expected adverse economic conditions, Housing Company H's free cash flow is expected to be reduced to the point that the coverage of scheduled loan payments could become tight. Municipality Z estimates that a further deterioration in cash flows may result in Housing Company H missing a contractual payment on the loan and becoming past due.
- D22. Recent third party appraisals have indicated a decrease in the value of the properties, resulting in a current LTV ratio of 70 per cent.
- D23. At the reporting date, the loan to Housing Company H is not considered to have low credit risk in accordance with paragraph 5.25. Municipality Z therefore needs to

assess whether there has been a significant increase in credit risk since initial recognition in accordance with paragraph 5.18, irrespective of the value of the collateral it holds. It notes that the loan is subject to considerable credit risk at the reporting date because even a slight deterioration in cash flows could result in Housing Company H missing a contractual payment on the loan. As a result, Municipality Z determines that the credit risk (i.e. the risk of a default occurring) has increased significantly since initial recognition. Consequently, Municipality Z recognises lifetime expected credit losses on the loan to Housing Company H.

- D24. Although lifetime expected credit losses should be recognised, the measurement of the expected credit losses will reflect the recovery expected from the collateral (adjusting for the costs of obtaining and selling the collateral) on the property as required by paragraph AG5.115 and may result in the expected credit losses on the loan being very small.

#### **Example 4—public investment-grade bond**

- D25. Company A is a large listed national logistics company. The only debt in the capital structure is a five-year public bond with a restriction on further borrowing as the only bond covenant. Company A reports quarterly to its shareholders. Social Insurance Agency B is one of many investors in the bond. Social Insurance Agency B considers the bond to have low credit risk at initial recognition in accordance with paragraph 5.25. This is because the bond has a low risk of default and Company A is considered to have a strong capacity to meet its obligations in the near term. Social Insurance Agency B's expectations for the longer term are that adverse changes in economic and business conditions may, but will not necessarily, reduce Company A's ability to fulfil its obligations on the bond. In addition, at initial recognition the bond had an internal credit rating that is correlated to a global external credit rating of investment grade.
- D26. At the reporting date, Social Insurance Agency B's main credit risk concern is the continuing pressure on the total volume of sales that has caused Company A's operating cash flows to decrease.
- D27. Because Social Insurance Agency B relies only on quarterly public information and does not have access to private credit risk information (because it is a bond investor), its assessment of changes in credit risk is tied to public announcements and information, including updates on credit perspectives in press releases from rating agencies.
- D28. Social Insurance Agency B applies the low credit risk simplification in paragraph 5.25. Accordingly, at the reporting date, Social Insurance Agency B evaluates whether the bond is considered to have low credit risk using all reasonable and supportable information that is available without undue cost or effort. In making that evaluation, Social Insurance Agency B reassesses the internal credit rating of the bond and



concludes that the bond is no longer equivalent to an investment grade rating because:

- (a) The latest quarterly report of Company A revealed a quarter-on-quarter decline in revenues of 20 per cent and in operating profit by 12 per cent.
- (b) Rating agencies have reacted negatively to a profit warning by Company A and put the credit rating under review for possible downgrade from investment grade to non-investment grade. However, at the reporting date the external credit risk rating was unchanged.
- (c) The bond price has also declined significantly, which has resulted in a higher yield to maturity. Social Insurance Agency B assesses that the bond prices have been declining as a result of increases in Company A's credit risk. This is because the market environment has not changed (for example, benchmark interest rates, liquidity etc. are unchanged) and comparison with the bond prices of peers shows that the reductions are probably company specific (instead of being, for example, changes in benchmark interest rates that are not indicative of company-specific credit risk).

D29. While Company A currently has the capacity to meet its commitments, the large uncertainties arising from its exposure to adverse business and economic conditions have increased the risk of a default occurring on the bond. As a result of the factors described in paragraph D27, Entity B determines that the bond does not have low credit risk at the reporting date. As a result, Social Insurance Agency B needs to determine whether the increase in credit risk since initial recognition has been significant. On the basis of its assessment, Social Insurance Agency B determines that the credit risk has increased significantly since initial recognition and that a loss allowance at an amount equal to lifetime expected credit losses should be recognised in accordance with paragraph 5.18.

#### **Example 5—responsiveness to changes in credit risk**

D30. Housing Finance Agency ABC provides mortgages to finance residential homes as part of the National Housing Programme in three different regions. The mortgage loans are originated across a wide range of LTV criteria and a wide range of income groups. As part of the mortgage application process, customers are required to provide information such as the industry within which the customer is employed and the post code of the property that serves as collateral on the mortgage.

D31. Housing Finance Agency ABC sets its acceptance criteria based on credit scores. Loans with a credit score above the 'acceptance level' are approved because these borrowers are considered to be able to meet contractual payment obligations. When new mortgage loans are originated, Housing Finance Agency ABC uses the credit score to determine the risk of a default occurring as at initial recognition.

D32. At the reporting date Housing Finance Agency ABC determines that economic conditions are expected to deteriorate significantly in all regions. Unemployment

levels are expected to increase while the value of residential property is expected to decrease, causing the LTV ratios to increase. As a result of the expected deterioration in economic conditions, Housing Finance Agency ABC expects default rates on the mortgage portfolio to increase.

#### Individual assessment

- D33. In Region One, Housing Finance Agency ABC assesses each of its mortgage loans on a monthly basis by means of an automated behavioural scoring process. Its scoring models are based on current and historical past due statuses, levels of customer indebtedness, LTV measures, customer behaviour on other financial instruments with Housing Finance Agency ABC, the loan size and the time since the origination of the loan. Housing Finance Agency ABC updates the LTV measures on a regular basis through an automated process that re-estimates property values using recent sales in each post code area and reasonable and supportable forward-looking information that is available without undue cost or effort.
- D34. Housing Finance Agency ABC has historical data that indicates a strong correlation between the value of residential property and the default rates for mortgages. That is, when the value of residential property declines, a customer has less economic incentive to make scheduled mortgage repayments, increasing the risk of a default occurring. D35. Through the impact of the LTV measure in the behavioural scoring model, an increased risk of a default occurring due to an expected decline in residential property value adjusts the behavioural scores. The behavioural score can be adjusted as a result of expected declines in property value even when the mortgage loan is a bullet loan with the most significant payment obligations at maturity (and beyond the next 12 months). Mortgages with a high LTV ratio are more sensitive to changes in the value of the residential property and Housing Finance Agency ABC is able to identify significant increases in credit risk since initial recognition on individual customers before a mortgage becomes past due if there has been a deterioration in the behavioural score.
- D36. When the increase in credit risk has been significant, a loss allowance at an amount equal to lifetime expected credit losses is recognised. Housing Finance Agency ABC measures the loss allowance by using the LTV measures to estimate the severity of the loss, i.e. the loss given default (LGD). The higher the LTV measure, the higher the expected credit losses all else being equal.
- D37. If Housing Finance Agency ABC was unable to update behavioural scores to reflect the expected declines in property prices, it would use reasonable and supportable information that is available without undue cost or effort to undertake a collective assessment to determine the loans on which there has been a significant increase in credit risk since initial recognition and recognise lifetime expected credit losses for those loans.

#### Collective assessment



D38. In Regions Two and Three, Housing Finance Agency ABC does not have an automated scoring capability. Instead, for credit risk management purposes, Housing Finance Agency ABC tracks the risk of a default occurring by means of past due statuses. It recognises a loss allowance at an amount equal to lifetime expected credit losses for all loans that have a past due status of more than 30 days past due. Although Housing Finance Agency ABC uses past due status information as the only borrower-specific information, it also considers other reasonable and supportable forward-looking information that is available without undue cost or effort to assess whether lifetime expected credit losses should be recognised on loans that are not more than 30 days past due. This is necessary in order to meet the objective in paragraph 5.19 of recognising lifetime expected credit losses for all significant increases in credit risk.

#### Region two

D39. Region Two includes a mining community that is largely dependent on the export of coal and related products. Housing Finance Agency ABC becomes aware of a significant decline in coal exports and anticipates the closure of several coal mines. Because of the expected increase in the unemployment rate, the risk of a default occurring on mortgage loans to borrowers who are employed by the coal mines is determined to have increased significantly, even if those customers are not past due at the reporting date. Housing Finance Agency ABC therefore segments its mortgage portfolio by the industry within which customers are employed (using the information recorded as part of the mortgage application process) to identify customers that rely on coal mining as the dominant source of employment (i.e. a 'bottom up' approach in which loans are identified based on a common risk characteristic). For those mortgages, Housing Finance Agency ABC recognises a loss allowance at an amount equal to lifetime expected credit losses while it continues to recognise a loss allowance at an amount equal to 12-month expected credit losses for all other mortgages in Region Two. <sup>6</sup> Newly originated mortgages to borrowers who rely on the coal mines for employment in this community would, however, have a loss allowance at an amount equal to 12-month expected credit losses because they would not have experienced significant increases in credit risk since initial recognition. However, some of these mortgages may experience significant increases in credit risk soon after initial recognition because of the expected closure of the coal mines.

#### Region three

D40. In Region Three, Housing Finance Agency ABC anticipates the risk of a default occurring and thus an increase in credit risk, as a result of an expected increase in interest rates during the expected life of the mortgages. Historically, an increase in

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<sup>6</sup> Except for those mortgages that are determined to have significantly increased in credit risk based on an individual assessment, such as those that are more than 30 days past due. Lifetime expected credit losses would also be recognised on those mortgages.

interest rates has been a lead indicator of future defaults on mortgages in Region Three—especially when customers do not have a fixed interest rate mortgage. Housing Finance Agency ABC determines that the variable interest-rate portfolio of mortgages in Region Three is homogenous and that unlike for Region Two, it is not possible to identify particular sub portfolios on the basis of shared risk characteristics that represent customers who are expected to have increased significantly in credit risk. However, as a result of the homogenous nature of the mortgages in Region Three, Housing Finance Agency ABC determines that an assessment can be made of a proportion of the overall portfolio that has significantly increased in credit risk since initial recognition (i.e. a ‘top down’ approach can be used). Based on historical information, Housing Finance Agency ABC estimates that an increase in interest rates of 200 basis points will cause a significant increase in credit risk on 20 per cent of the variable interest-rate portfolio. Therefore, as a result of the anticipated increase in interest rates, Housing Finance Agency ABC determines that the credit risk on 20 per cent of mortgages in Region Three has increased significantly since initial recognition. Accordingly Housing Finance Agency ABC recognises lifetime expected credit losses on 20 per cent of the variable rate mortgage portfolio and a loss allowance at an amount equal to 12-month expected credit losses for the remainder of the portfolio.

#### **Example 6—comparison to maximum initial credit risk**

- D41. Housing Finance Agency A has two portfolios of mortgage loans with housing intermediaries on similar terms and conditions in Region W. Housing Finance Agency A’s policy on financing decisions for each loan is based on an internal credit rating system that considers an intermediary’s credit history, payment behaviour on other products with Housing Finance Agency A and other factors, and assigns an internal credit risk rating from 1 (lowest credit risk) to 10 (highest credit risk) to each loan on origination. The risk of a default occurring increases exponentially as the credit risk rating deteriorates so, for example, the difference between credit risk rating grades 1 and 2 is smaller than the difference between credit risk rating grades 2 and 3. Loans in Portfolio 1 were only offered to existing intermediaries with a similar internal credit risk rating and at initial recognition all loans were rated 3 or 4 on the internal rating scale. Housing Finance Agency A determines that the maximum initial credit risk rating at initial recognition it would accept for Portfolio 1 is an internal rating of 4. Loans in Portfolio 2 were offered to intermediaries that responded to an advertisement and the internal credit risk ratings of these intermediaries range between 4 and 7 on the internal rating scale. Housing Finance Agency A never originates a loan with an internal credit risk rating worse than 7 (i.e. with an internal rating of 8–10).
- D42. For the purposes of assessing whether there have been significant increases in credit risk, Housing Finance Agency A determines that all loans in Portfolio 1 had a similar initial credit risk. It determines that given the risk of default reflected in its internal risk rating grades, a change in internal rating from 3 to 4 would not represent a significant

increase in credit risk but that there has been a significant increase in credit risk on any loan in this portfolio that has an internal rating worse than 5. This means that Housing Finance Agency A does not have to know the initial credit rating of each loan in the portfolio to assess the change in credit risk since initial recognition. It only has to determine whether the credit risk is worse than 5 at the reporting date to determine whether lifetime expected credit losses should be recognised in accordance with paragraph 5.18.

- D43. However, determining the maximum initial credit risk accepted at initial recognition for Portfolio 2 at an internal credit risk rating of 7, would not meet the objective of the requirements as stated in paragraph 5.19. This is because Housing Finance Agency A determines that significant increases in credit risk arise not only when credit risk increases above the level at which an entity would originate new financial assets (i.e. when the internal rating is worse than 7). Although Housing Finance Agency A never originates a loan with an internal credit rating worse than 7, the initial credit risk on loans in Portfolio 2 is not of sufficiently similar credit risk at initial recognition to apply the approach used for Portfolio 1. This means that Housing Finance Agency A cannot simply compare the credit risk at the reporting date with the lowest credit quality at initial recognition (for example, by comparing the internal credit risk rating of loans in Portfolio 2 with an internal credit risk rating of 7) to determine whether credit risk has increased significantly because the initial credit quality of loans in the portfolio is too diverse. For example, if a loan initially had a credit risk rating of 4 the credit risk on the loan may have increased significantly if its internal credit risk rating changes to 6.

### **Example 7—counterparty assessment of credit risk**

#### Scenario 1

- D44. In 20X0 Development Agency A granted a loan of R10 000 with a contractual term of 15 years to Company Q when the company had an internal credit risk rating of 4 on a scale of 1 (lowest credit risk) to 10 (highest credit risk). The risk of a default occurring increases exponentially as the credit risk rating deteriorates so, for example, the difference between credit risk rating grades 1 and 2 is smaller than the difference between credit risk rating grades 2 and 3. In 20X5, when Company Q had an internal credit risk rating of 6, Development Agency A issued another loan to Company Q for R5 000 with a contractual term of 10 years. In 20X7 Company Q fails to retain its contract with a major customer and correspondingly experiences a large decline in its revenue. Development Agency A considers that as a result of losing the contract, Company Q will have a significantly reduced ability to meet its loan obligations and changes its internal credit risk rating to 8.
- D45. Development Agency A assesses credit risk on a counterparty level for credit risk management purposes and determines that the increase in Company Q's credit risk is significant. Although Development Agency A did not perform an individual assessment of changes in the credit risk on each loan since its initial recognition, assessing the credit risk on a counterparty level and recognising lifetime expected

credit losses on all loans granted to Company Q, meets the objective of the impairment requirements as stated in paragraph 5.19. This is because, even since the most recent loan was originated (in 20X7) when Company Q had the highest credit risk at loan origination, its credit risk has increased significantly. The counterparty assessment would therefore achieve the same result as assessing the change in credit risk for each loan individually.

#### Scenario 2

- D46. Development Agency A granted a loan of R150 000 with a contractual term of 20 years to Company X in 20X0 when the company had an internal credit risk rating of 4. During 20X5 economic conditions deteriorate and demand for Company X's products has declined significantly. As a result of the reduced cash flows from lower sales, Company X could not make full payment of its loan instalment to Development Agency A. Development Agency A re-assesses Company X's internal credit risk rating, and determines it to be 7 at the reporting date. Development Agency considered the change in credit risk on the loan, including considering the change in the internal credit risk rating, and determines that there has been a significant increase in credit risk and recognises lifetime expected credit losses on the loan of R150 000.
- D47. Despite the recent downgrade of the internal credit risk rating, Development Agency A grants another loan of R50,000 to Company X in 20X6 with a contractual term of 5 years, taking into consideration the higher credit risk at that date.
- D48. The fact that Company X's credit risk (assessed on a counterparty basis) has previously been assessed to have increased significantly, does not result in lifetime expected credit losses being recognised on the new loan. This is because the credit risk on the new loan has not increased significantly since the loan was initially recognised. If Development Agency A only assessed credit risk on a counterparty level, without considering whether the conclusion about changes in credit risk applies to all individual financial instruments provided to the same customer, the objective in paragraph 5.19 would not be met.

### Recognition and measurement of expected credit losses

- D49. The following examples illustrate the application of the recognition and measurement requirements in accordance with Section 5.

#### Example 8—12-month expected credit loss measurement using an explicit 'probability of default' approach

##### Scenario 1

- D50. Development Agency A originates a single 10 year amortising loan for R1 million. Taking into consideration the expectations for instruments with similar credit risk (using reasonable and supportable information that is available without undue cost or effort), the credit risk of the borrower, and the economic outlook for the next 12

months, Development Agency A estimates that the loan at initial recognition has a probability of default (PD) of 0.5 per cent over the next 12 months. Development Agency A also determines that changes in the 12-month PD are a reasonable approximation of the changes in the lifetime PD for determining whether there has been a significant increase in credit risk since initial recognition.

- D51. At the reporting date (which is before payment on the loan is due<sup>7</sup>), there has been no change in the 12-month PD and Development Agency A determines that there was no significant increase in credit risk since initial recognition. Development Finance Agency A determines that 25 per cent of the gross carrying amount will be lost if the loan defaults (i.e. the LGD is 25 per cent).<sup>8</sup> Development Finance Agency A measures the loss allowance at an amount equal to 12-month expected credit losses using the 12-month PD of 0.5 per cent. Implicit in that calculation is the 99.5 per cent probability that there is no default. At the reporting date the loss allowance for the 12 month expected credit losses is R1 250 (0.5% × 25% × R1 000 000).

#### *Scenario 2*

- D52. Development Agency B acquires a portfolio of 1 000 five year bullet loans for R1 000 each (i.e. R1million in total) with an average 12-month PD of 0.5 per cent for the portfolio. Development Agency B determines that because the loans only have significant payment obligations beyond the next 12 months, it would not be appropriate to consider changes in the 12-month PD when determining whether there have been significant increases in credit risk since initial recognition. At the reporting date Development Agency B therefore uses changes in the lifetime PD to determine whether the credit risk of the portfolio has increased significantly since initial recognition.
- D53. Development Agency B determines that there has not been a significant increase in credit risk since initial recognition and estimates that the portfolio has an average LGD of 25 per cent. Development Agency B determines that it is appropriate to measure the loss allowance on a collective basis. The 12-month PD remains at 0.5 per cent at the reporting date. Development Agency B therefore measures the loss allowance on a collective basis at an amount equal to 12-month expected credit losses based on the average 0.5 per cent 12-month PD. Implicit in the calculation is the 99.5 per cent probability that there is no default. At the reporting date the loss allowance for the 12-month expected credit losses is R1 250 (0.5% × 25% × R1 000 000).

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<sup>7</sup> Thus for simplicity of illustration, it is assumed there is no amortisation of the loan.

<sup>8</sup> Because the LGD represents a percentage of the present value of the gross carrying amount, this example does not illustrate the time value of money.

**Example 9—12-month expected credit loss measurement based on a loss rate approach**

- D54. Development Agency A originates 2 000 bullet loans with a total gross carrying amount of R500 000. Development Agency A segments its portfolio into borrower groups (Groups X and Y) on the basis of shared credit risk characteristics at initial recognition. Group X comprises 1 000 loans with a gross carrying amount per client of R200, for a total gross carrying amount of R200 000. Group Y comprises 1 000 loans with a gross carrying amount per client of R300, for a total gross carrying amount of R300 000. There are no transaction costs and the loan contracts include no options (for example, prepayment or call options), premiums or discounts, points paid, or other fees.
- D55. Development Agency A measures expected credit losses on the basis of a loss rate approach for Groups X and Y. In order to develop its loss rates, Development Agency A considers samples of its own historical default and loss experience for those types of loans. In addition, Development Agency A considers forward-looking information, and updates its historical information for current economic conditions as well as reasonable and supportable forecasts of future economic conditions. Historically, for a population of 1 000 loans in each group, Group X's loss rates are 0.3 per cent, based on four defaults, and historical loss rates for Group Y are 0.15 per cent, based on two defaults.

	Number of clients in sample	Estimated per client gross carrying amount at default	Total estimated gross carrying amount at default	Historic per annum average defaults	Estimated total gross carrying amount at default	Present value of observed loss <sup>11</sup>	Loss rate
		R	R		R	R	
Group	A	B	$C = A \times B$	D	$E = B \times D$	F	$G = F \div C$
X	1 000	200	200 000	4	800	600	0.3%
Y	1 000	300	300 000	2	600	450	0.15%

- D56. At the reporting date, Development Agency A expects an increase in defaults over the next 12 months compared to the historical rate. As a result, Development Agency A estimates five defaults in the next 12 months for loans in Group X and three for loans in Group Y. It estimates that the present value of the observed credit loss per client will remain consistent with the historical loss per client.
- D57. On the basis of the expected life of the loans, Development Agency A determines that the expected increase in defaults does not represent a significant increase in credit risk since initial recognition for the portfolios. On the basis of its forecasts, Development Agency A measures the loss allowance at an amount equal to 12-month expected credit losses on the 1,000 loans in each group amounting to R750 and R675 respectively. This equates to a loss rate in the first year of 0.375 per cent for Group X and 0.225 per cent for Group Y.



	Number of clients in sample	Estimated per client gross carrying amount at default	Total estimated gross carrying amount at default	Expected defaults	Estimated total gross carrying amount at default	Present value of observed loss	Loss rate
		R	R		R	R	
Group	A	B	$C = A \times B$	D	$E = B \times D$	F	$G = F \div C$
X	1 000	200	200,000	5	1,000	750	0.375%
Y	1 000	300	300,000	3	900	675	0.225%

D58. Development Agency A uses the loss rates of 0.375 per cent and 0.225 per cent respectively to estimate 12-month expected credit losses on new loans in Group X and Group Y originated during the year and for which credit risk has not increased significantly since initial recognition.

#### Example 10—modification of contractual cash flows

D59. Development Agency A originates a five-year loan that requires the repayment of the outstanding contractual amount in full at maturity. Its contractual par amount is R1 000 with an interest rate of 5 per cent payable annually. The effective interest rate is 5 per cent. At the end of the first reporting period (Period 1), Development Agency A recognises a loss allowance at an amount equal to 12-month expected credit losses because there has not been a significant increase in credit risk since initial recognition. A loss allowance balance of R20 is recognised.

D60. In the subsequent reporting period (Period 2), Development Agency A determines that the credit risk on the loan has increased significantly since initial recognition. As a result of this increase, Development Agency A recognises lifetime expected credit losses on the loan. The loss allowance balance is R30.

D61. At the end of the third reporting period (Period 3), following significant financial difficulty of the borrower, Development Agency A modifies the contractual cash flows on the loan. It extends the contractual term of the loan by one year so that the remaining term at the date of the modification is three years. The modification does not result in the derecognition of the loan by Development Agency A.

D62. As a result of that modification, Development Agency A recalculates the gross carrying amount of the financial asset as the present value of the modified contractual cash flows discounted at the loan's original effective interest rate of 5 per cent. In accordance with paragraph 5.15, the difference between this recalculated gross carrying amount and the gross carrying amount before the modification is recognised as a modification gain or loss. Development Agency A recognises the modification loss (calculated as R300) against the gross carrying amount of the loan, reducing it to R700, and a modification loss of R300 in surplus or deficit.

D63. Development Agency A also remeasures the loss allowance, taking into account the modified contractual cash flows and evaluates whether the loss allowance for the loan shall continue to be measured at an amount equal to lifetime expected credit losses. Development Agency A compares the current credit risk (taking into consideration the modified cash flows) to the credit risk (on the original unmodified cash flows) at initial recognition. Development Agency A determines that the loan is not credit-impaired at the reporting date but that credit risk has still significantly increased compared to the credit risk at initial recognition and continues to measure the loss allowance at an amount equal to lifetime expected credit losses. The loss allowance balance for lifetime expected credit losses is R100 at the reporting date.

Period	Beginning gross carrying amount	Impairment (loss)/gain	Modification (loss)/gain	Interest revenue	Cash flows	Ending gross carrying amount	Loss allowance	Ending amortised cost amount
	R	R	R	R	R	R	R	R
	A	B	C	D Gross: A x 5%	E	F = A + C + D - E	G	H = F - G
1	1 000	(20)		50	50	1 000	20	980
2	1 000	(10)		50	50	1 000	30	970
3	1 000	(70)	(300)	50	50	700	100	600

D64. At each subsequent reporting date, Development Agency A evaluates whether there is a significant increase in credit risk by comparing the loan's credit risk at initial recognition (based on the original, unmodified cash flows) with the credit risk at the reporting date (based on the modified cash flows), in accordance with paragraph 5.27.

D65. Two reporting periods after the loan modification (Period 5), the borrower has outperformed its business plan significantly compared to the expectations at the modification date. In addition, the outlook for the business is more positive than previously envisaged. An assessment of all reasonable and supportable information that is available without undue cost or effort indicates that the overall credit risk on the loan has decreased and that the risk of a default occurring over the expected life of the loan has decreased, so Development Agency A adjusts the borrower's internal credit rating at the end of the reporting period.

D66. Given the positive overall development, Development Agency A re-assesses the situation and concludes that the credit risk of the loan has decreased and there is no longer a significant increase in credit risk since initial recognition. As a result, Development Agency A once again measures the loss allowance at an amount equal to 12-month expected credit losses.

### Example 11—provision matrix

D67. Municipality M has a portfolio of receivables of R30 million in 20X1 and operates only in one geographical region. The customer base consists of a large number of individual clients and the receivables are categorised by common risk characteristics that are representative of the customers' abilities to pay all amounts due in accordance with the contractual terms. The receivables are measured at an amount equal to lifetime time expected credit losses.

D68. To determine the expected credit losses for the portfolio, Municipality M uses a provision matrix. The provision matrix is based on its historical observed default rates over the expected life of the trade receivables and is adjusted for forward-looking estimates. At every reporting date the historical observed default rates are updated and changes in the forward-looking estimates are analysed. In this case it is forecast that economic conditions will deteriorate over the next year.

D69. On that basis, Municipality M estimates the following provision matrix:

	Current	1–30dayspast due	31–60 days past due	61–90 days past due	More than 90 days past due
Default rate	0.3%	1.6%	3.6%	6.6%	10.6%

D70. The trade-receivables from the large number of small customers amount to RCU30 million and are measured using the provision matrix.

	Gross carrying amount	Lifetime expected credit loss allowance(Gross carrying amount x lifetime expected credit loss rate)
	R	
Current	15 000 000	45 000
1–30 days past due	7 500 000	120 000
31–60 days past due	4 000 000	144 000
61–90 days past due	2 500 000	165 000
More than 90 days past due	1 000 000	106 000
	<b>30 000 000</b>	<b>580 000</b>

### Reclassification of financial assets

#### Example 12

D71. National Government purchases a portfolio of bonds for its fair value (gross carrying amount) of R500 000.

D72. National Government changes the management model for managing the bonds in accordance with paragraph 4.16. The fair value of the portfolio of bonds at the reclassification date is R490 000.

D73. As the portfolio would be measured at amortised cost immediately prior to reclassification, the loss allowance recognised at the date of reclassification would be R6 000 (reflecting a significant increase in credit risk since initial recognition and thus the measurement of lifetime expected credit losses).

D74. The 12-month expected credit losses at the reclassification date are R4 000.

D75. For simplicity, journal entries for the recognition of interest revenue are not provided.

*Scenario 1: Reclassification out of the amortised cost measurement category and into the fair value through profit or loss measurement category*

D76. National Government A reclassifies the portfolio of bonds out of the amortised cost measurement category and into the fair value through surplus or deficit category. At the reclassification date, the portfolio of bonds is measured at fair value. Any gain or loss arising from a difference between the previous amortised cost amount of the portfolio of bonds and the fair value of the portfolio of bonds is recognised in surplus or deficit on reclassification.

	Debit R	Credit R
Bonds (FVSD assets)	490 000	
Bonds (gross carrying amount of the amortised cost assets)		500 000
Loss allowance	6 000	
Reclassification loss (surplus or deficit)	4 000	
<i>(To recognise the reclassification of bonds from amortised cost to fair value through surplus or deficit and to derecognise the loss allowance.)</i>		

D77. National Government A reclassifies the portfolio of bonds out of the fair value through surplus or deficit measurement category and into the amortised cost measurement category. At the reclassification date, the fair value of the portfolio of bonds becomes the new gross carrying amount and the effective interest rate is determined based on that gross carrying amount. The impairment requirements apply to the bond from the reclassification date. For the purposes of recognising expected credit losses, the credit risk of the portfolio of bonds at the reclassification date becomes the credit risk against which future changes in credit risk shall be compared

*Scenario 2: Reclassification out of the fair value through surplus or deficit measurement category and into the amortised cost measurement category*

	Debit R	Credit R
Bonds (gross carrying amount of the amortised cost assets)	490 000	
Bonds (FVSD-assets)		490 000

Impairment loss (surplus or deficit)	4 000	
Loss allowance		4 000
<i>(To recognise reclassification of bonds from fair value through surplus or deficit-to amortised cost including commencing accounting for impairment.)</i>		