Moody's Analytics

Better Faster Decisions

# LDTI – We are here.

## Are you ready?

June 2022

# Agenda

1. Insights and lessons learned
2. Reporting and disclosures requirements
3. Treatment of loss-making cohorts
4. Traditional products
5. Limited pay
6. Management of subcohorts
7. Conclusion

# 1 Insights and lessons learned

# Clients & Market Leaders Feedback

## Insights and lessons learned

Insights and lessons learned from our Clients and Market Leaders

**Focus on Core LDTI Requirements**

Mapping of Chart of Accounts and broader reporting requirements.

**Reporting Requirements**

Reporting requirements go much further than illustrative examples in ASU 2018-12 pushing for the need of sub-cohort and contract level data.

**Flexibility and Customization**

Flexibility and customization are required in the production of rollforward analysis:

- Breakdown of variables in custom dimensions,
- Flexibility in adding runs / calculation steps.

**Interim Reporting**

Interim reporting (and period-to-date vs year-to-date) poses some specific accounting challenges which insurers have to cope with.

**Roadmap Synchronization**

Tight coordination and alignment is needed between the LDTI adjustment roadmaps of the actuarial modelling tool and downstream accounting and reporting solution, as it is done for AXIS™, GAAP Link and RiskIntegrity™.

# 2 Reporting and disclosures requirements

# Pre-Built Reporting and Disclosure Requirements

## All covered by RiskIntegrity™ for LDTI

| Disclosure | ASC 944 Paragraph | Report Template Reference |
|---|---|---|
| Deferred Acquisition Costs | ASC 944-30-55-2 | ASU 2018-12 Example 1 |
| Liability for Future Policy Benefits | ASC 944-40-55-29E | ASU 2018-12 Example 3 |
| (Re)Insurance subledger level balance sheet extract | | Example provided by Big 4 |
| (Re)Insurance subledger level income statement extract | | Example provided by Big 4 |
| Market Risk Benefits | ASC 944-40-55-29G | ASU 2018-12 Example 5 |
| Deferred Profit Liability (DPL) Rollforward | | Moody's proprietary report template |
| Stat-GAAP reconciliation by LoB | | Moody's proprietary report template |
| Cost of Reinsurance for LFPB | | Moody's proprietary report template |
| Stat-GAAP reconciliation by LoB | | Moody's proprietary report template |
| Balances of and changes in policyholders' account balances | ASC 944-40-55-29F | ASU 2018-12 Example 4.2 |
| Separate account liability | 944-80-25-2 | Example provided by Big 4 |
| Original net premium ratio at the issue date of the portfolio | ASC 944-40-55-29K | ASU 2018-12 Example 6 |
| Original net premium ratio at the issue date of the portfolio | ASC 944-40-55-29K | ASU 2018-12 Example 7 |
| Computation of Amortization | ASC 944-30-55-7 | ASU 2018-12 Example 2: Schedule 1,3,5 |
| Computation of Amortization | ASC 944-30-55-7 | ASU 2018-12 Example 2: Schedule 2,4,6 |
| Deferred Acquisition Costs Rollforward | ASC 944-30-55-7 | ASU 2018-12 Example 2: Schedule 7 |
| Sales Inducements Assets | | Moody's proprietary report template |
| Additional Liability | ASC 944-40-25-25B | Moody's proprietary report template |
| Unrealized Revenue Liability | | Moody's proprietary report template |
| Liability for Policyholder's Account Balances - Range of Guaranteed Minimum Crediting Rate | ASC 944-40-55-29F | ASU 2018-12 Example 4.1 |
| Undiscounted expected future benefit payments and expected gross premiums | ASC 944-40-50-6b-1 | Example provided by Big 4 |
| Actual experience during the period for mortality, morbidity, and lapses, compared with what was expected for the period | ASC 944-40-50-6b-2 | |
| Amount of revenue and interest recognized in the income statement | ASC 944-40-50-6b-3<br>ASC 944-40-50-6c | Example provided by Big 4 |
| Weighted-average liability duration of the liability for future policy benefits | ASC 944-40-50-6b-5 | Example provided by Big 4 |
| Weighted-average interest rate | ASC 944-40-50-6b-6 | Example provided by Big 4 |
| Reconciliation of the net liability for future policy benefits to the liability for future policy benefits in the consolidated balance sheet | ASC 944-40-50-6c | Example provided by Big 4 |
| Blocks of business with Net Premium Ratio greater than 100% | ASC 944-40-50-6d | Moody's proprietary report template |

# 3 Treatment of loss-making cohorts

# Developing Early Positions on Illustrative Disclosures

## How to report on Loss-Making Cohorts

- No illustrative disclosure examples provided in ASU 2018-12 or elsewhere
- Here is Moody's proposition for this disclosure:

| | | | Before Adjustment | | | Immediate Charge | | |
|---|---|---|---|---|---|---|---|---|
| **LoB** | **Cohort** | **Posting Date** | **PV (Benefits & Expenses)** | **PV (Gross Premiums)** | **K-factor** | **Total Current** | **Total Previous** | **Adjustment** |
| A | A1 | 30/06/2022 | 10,150,000.00 | 10,000,000.00 | 101.50% | 150,000.00 | 100,000.00 | 50,000.00 |
| | A2 | 30/06/2022 | 15,375,000.00 | 15,000,000.00 | 102.50% | 375,000.00 | 0.00 | 375,000.00 |
| | A3 | 30/06/2022 | 13,260,000.00 | 13,000,000.00 | 102.00% | 260,000.00 | 260,000.00 | 0.00 |
| B | B1 | 30/06/2022 | 22,410,000.00 | 22,000,000.00 | 101.86% | 410,000.00 | 418,000.00 | -8,000.00 |
| | B2 | 30/06/2022 | 32,500,000.00 | 33,000,000.00 | 98.48% | -500,000.00 | 990,000.00 | -990,000.00 |
| | | | | | **TOTAL Immediate Charge** | **695,000.00** | **1,768,000.00** | **-573,000.00** |

Was already loss-making and situation deteriorated further in this period.

Started the period profitable, but became loss making in the period.

Was already loss-making, situation improved, but remains loss making.

Was already loss-making, situation improved so much that immediate charge dissolves. K-factor drops below 100%. Charge floored to 0 and doesn't become negative.

# 4 Traditional products

# Liability for Future Policy Benefits (LFPB)

## Net premium approach

» Net Premium:

**Present Value of Benefits & Expenses**
- Discount at Current Rate
- Includes claim expense ONLY
- Best Estimate Assumptions

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**LFPB K-Factor**
- See formula below
- Updated each reporting period

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**Present Value of Gross Premiums**
- Discount at Current Rate
- Best Estimate Assumptions

Present Value of Net Premiums

» LFPB K-factor:

| Benefits + Expense | | |
|---|---|---|
| “Expected” Present Value of Future at Locked Rate | “Actuals” Accumulated Historical Amounts | Accumulated Transition Balance |

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| Gross Premiums | |
|---|---|
| “Expected” Present Value of Future at Locked Rate | “Actuals” Accumulated Historical Amounts |

Capped at 100%

# K-Factor Cap and Immediate Charge

## ASC 944-40-30-7A

*"To the extent the present value of future benefits and expenses exceeds the present value of future gross premiums, an immediate charge shall be recognized in net income such that net premiums are set equal to gross premiums"*

- 3 different views on the rollforward of premiums:

| | |
|---|---|
| **PV of Net Premiums considering K-factor cap** | LDTI compliant view |
| **PV of Net Premiums considering K-factor uncapped** | For internal analysis only |
| **PV of Gross Premiums** | Factual cash flow view |

| Roll-Forward | Net Premiums Capped | Net Premiums Uncapped | Gross Premiums |
|---|---|---|---|
| Balance, beginning of period | -622,602.60 | -676,336.56 | -204,132.00 |
| Beginning balance at original discount rate | -636,562.50 | -691,501.25 | -208,709.02 |
| Effect of changes in cash flow assumptions | 0.00 | 0.00 | 0.00 |
| Effect of actual variances from expected experience | 622,779.69 | 679,583.53 | 204,190.06 |
| Adjusted beginning of year balance | -13,782.81 | -11,917.72 | -4,518.96 |
| Issuances | -23,107.65 | -16,466.10 | -7,576.28 |
| Interest accrual | -9.24 | -7.10 | -3.03 |
| Net premiums collected | -22.88 | -17.57 | -7.50 |

# Liability for Future Policy Benefits

## Accounting treatment

- » What has to be posted:
  - – Movements in PV of Benefits and Expenses
  - – Movements in PV of Net Premiums
- » Difference between both = LFPB ➡ LFPB is not directly posted

# K-Factor Cap and Immediate Charge

## Accounting treatment

Present Value of Benefits − LFPB K-factor × Present Value of Gross Premiums

Present Value of Net Premiums calculation based on a capped K-factor makes that immediate charge is part of the LFPB postings

» Accounting logic:

We debit and credit change in immediate charge on 2 dummy accounts (zero impact on P&L), only to have the amount isolated on an account in the subledger (and GL)

# LFPB floor

*“In no event shall the LFPB balance be less than zero” (ASC 944-40-30-7A)*

- Actuarial rollforward analysis is on an unfloored LFPB basis
- Show unflooring/flooring impact at BOP/EOP:

| Roll-Forward |
|---|
| Balance beginning of period floored |
| Unflooring Impact |
| Balance beginning of period unfloored |

- Accounting treatment:
  - LFPB < 0 ➡ Post floor to make LFPB = 0
  - Only posting directly at LFPB level, instead of via PV(net premiums) and PV(benefits & expenses)

# 5 | Limited Pay

# Limited Pay Contracts

## What is a Deferred Profit Liability (DPL)?

Example:

» Mortgage house loan for a term of 20 years + Debt balance insurance (life insurance)

» Outstanding debt decreases across the term ➡ firm wants to collect most of the premiums early

» Typical contract

  – Upfront balloon payment of entire premium

  – Or annual payment for 2/3 of the term:

    › Payment across first 12 year

    › Remaining 8 years: no more premium receivables

➡ Defer premium receipts in a Deferred Profit Liability which is amortized across future periods, in accordance with service provided

# Limited Pay Contracts

## Roll-forward analysis

Roll-forward analysis of the following metrics are required:

- Traditional roll-forward: same as the one for LFPB with separated roll-forward for PVP and PVB
- Deferred Profit Liability: Specific roll-forward for Limited pay

| PVP Roll-Forward | |
|---|---|
| | |
| Beginning Balance | 551.786,39 |
| Beginning Balance at locked DR | 551.786,39 |
| Effect of CF assumption change | (151.054,58) |
| Effect of new business | (400.731,81) |
| Effect of experience | 700.863,60 |
| Revalued beginning balance | 700.863,60 |
| Valuation premium collected | 70.791,83 |
| Interest accrued | 6.615,71 |
| Ending balance at locked DR | 636.687,48 |
| Effect of discount rate change | - |
| Ending balance | 636.687,48 |

| PVB Roll-Forward | |
|---|---|
| | |
| Beginning Balance | 641550,3125 |
| Beginning Balance at locked DR | 641550,3125 |
| Effect of CF assumption change | -172528,9688 |
| Effect of new business | -469021,3438 |
| Effect of experience | 768563,25 |
| Revalued beginning balance | 768563,25 |
| Benefits Paid | 0 |
| Interest accrued | 7572,9375 |
| Ending balance at locked DR | 776136,1875 |
| Effect of discount rate change | 0 |
| Ending balance | 776.136,19 |

| DPL (Roll - Forward) | |
|---|---|
| | |
| Beginning balance | 1.325.423,25 |
| (+) Effect of CF assumption change | 8.644,63 |
| (+) Effect of new business | (1.334.067,88) |
| (+) Effect of experience | 1.328.229,75 |
| Revalued beginning balance | 1.328.229,75 |
| (+) Profits deferred | 1.569.208,18 |
| (+) Interest accrued | 18.012,80 |
| (-) Amortization | 329.035,49 |
| Ending balance | 2.586.415,25 |

# Limited Pay Contracts

## DPL and K-factor calculations

» DPL:

**Present Value of Base**
- Discount at Current Rate
- Best Estimate Assumptions

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**DPL K-Factor**
- See formula below
- Updated each reporting period*

−

**Present Value of Profits**
- Discount at Current Rate
- Best Estimate Assumptions

» DPL K-factor:

**Deferred Profits**
- "Expected" Present Value of Future at Locked Rate
- "Actuals" Accumulated Historical Amounts
- Accumulated Transition Balance

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**Base (Accum + PV)**
- Inforce for Insurance
- Benefits for Annuities

# Profits Deferred

## Reconciliation between DPL and LFPB rollforwards

$$Profits\ Deferred = (100\% \ - LFPB\ K\_Factor) * Gross\ Premium$$

In RiskIntegrity™ for LDTI:

$$DPL\_PROFIT\_DEF = (1 - PVBE\ /\ PVP\_GROSS)\ \ * PVP\_GROSS$$

- *PVBE* = PV of benefits and expenses at locked DR in LFPB
- *PVP_GROSS* = PV of gross premiums

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# Management of subcohorts

# Management of subcohorts

## The use case

» LDTI unit of account is cohort

» Companies wish to analyze results at a more granular level (subcohort) for management reporting purposes:

- To better understand cohort level results and have a better control on their final numbers
- Being able to produce and post journal entries at subcohort level
- Have more flexibility for source of earnings analysis

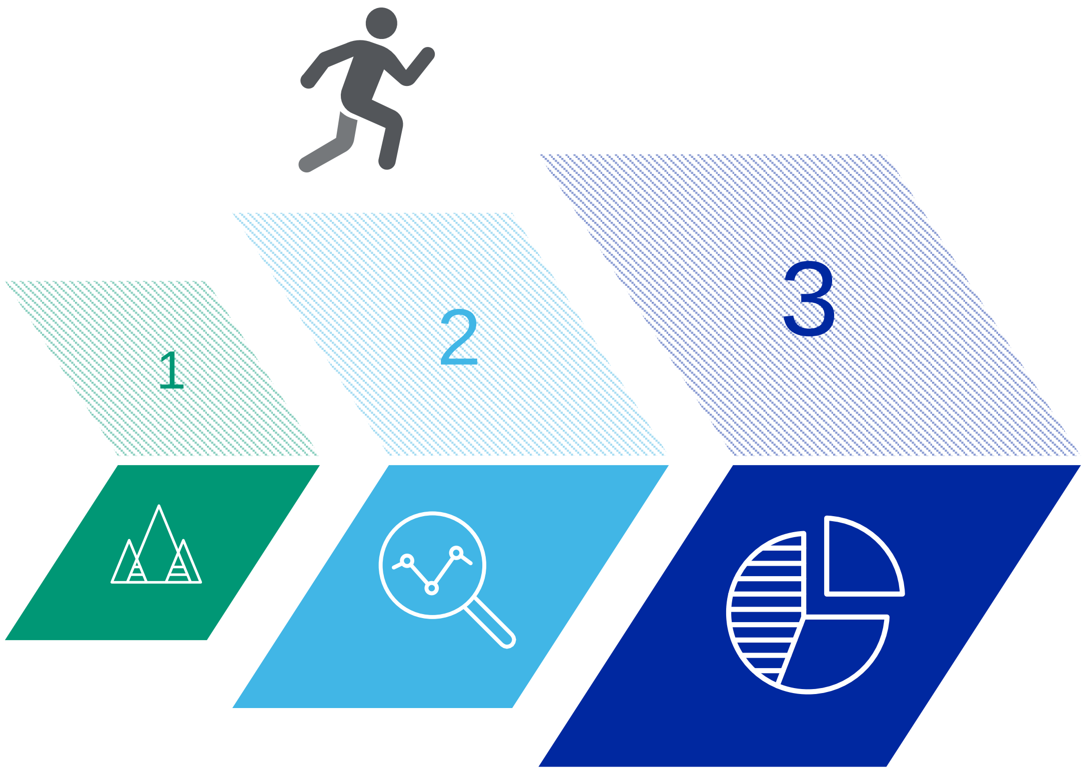
# Management of subcohorts
## The challenges

» This requires to solve the two following issues:

- Make subcohorts additive and fix the difference between subcohort and cohort level results
- Implement the treatment of K-factor cap and LFPB floor at subcohort level
  Eg. one subcohort is loss-making, the immediate charge is recognized  but the related cohort remains profitable, there is no immediate charge

# Management of subcohorts

## How do we achieve that?




**STEP 1**

**Introduce subcohort into standard import template for all product components**

Data driven, subcohort is optional and 3 cases possible:

- Only cohort
- Only subcohort
- Both cohort and subcohort

**STEP 2**

**A) Enable actuarial calculation at subcohort level**

- Global level
- Specific cases

**B) Enable journal posting at subcohort level**

**STEP 3**

**Enable the subcohort granularity in the reports and disclosures**

# Management of subcohorts

## Reports and disclosures

PVP | PV of Expected Net Premiums PV of Gross Premiums

Roll-forward Drill-down Analysis

| Period | Current | | Previous | |
|---|---|---|---|---|
| On a capped, unfloored LFPB basis | Cohort Level | Sub - Cohort Level | Cohort Level | Sub - Cohort Level |
| **Balance, beginning of period** | **$3,689,275.38** | **$40,802,143.50** | **$1,672,163.27** | **$28,997,739.43** |
| **60289 Reg LP** | **$204,132.00** | **$204,132.00** | **$50,099.36** | **$181,041.93** |
| 60289_SUBCohort01 | | $61,239.60 | | $46,581.19 |
| 60289_SUBCohort02 | | $142,892.40 | | $134,460.74 |

» Comparison of cohort level and subcohort results available side by side:

- Cohort level: showing the amount at cohort level for a given rollforward
- Subcohort level: showing the amount at subcohort level for a given rollforward
- If only subcohort level outputs available (inputs provided only at subcohorts level), display the sum of subcohorts at cohort level

# Management of subcohorts

## Subcohorts not additive vs. Posting at subcohort level

- Due to the division defined to calculate K-factor of LFPB: discrepancy between cohort and subcohort levels
- LDTI requirement is cohort as unit of account for journal posting
- Impact on traditional contracts LFPB, DPL and CoR

$$PVP\_NET(SubA) + PVP\_NET(Sub\ B) \neq PVP\_NET\ (Cohort)$$

$$PVP\_NET_{(SubA)} = LFBP\ K\ factor_{(SubA)}{}^{*}\ PVP\_Gross_{(SubA)}$$

$$PVP\_NET_{(SubB)} = LFBP\ K\ factor_{(SubB)}{}^{*}\ PVP\_Gross_{(SubB)}$$

$$PVP\_NET_{(Cohort)} = LFBP\ K\ factor_{(Cohort)}{}^{*}\ PVP\_Gross_{(Cohort)}$$

➡ LFPB K-factor could be different for SubA, SubB and Cohort

$$Cohort.VariableX \neq \sum_{i=1}^{n} Subcohort_i.VariableX$$

# Management of subcohorts

## Creation of proxy "Residue" subcohort

| | 60289 Reg LP | Subcohort01 | Subcohort02 |
|---|---|---|---|
| | | | |
| PVP_NET | -219144.4668 | -62612.7048 | -146096.3112 |
| PVBE | 731541.4313 | 209011.8375 | 487694.2875 |
| | | | |

Input

» <u>Prerequisite:</u>
Input values must be provided at both cohort and subcohort levels

| | 60289 Reg LP | Subcohort01 | Subcohort02 | Residue |
|---|---|---|---|---|
| | | | | |
| PVP_NET | -219144.47 | -62612.70 | -146096.31 | -10435.45 |
| PVBE | 731541.43 | 209011.84 | 487694.29 | 34835.31 |
| LFPB | 512396.97 | 146399.13 | 341597.98 | 24399.86 |

» For each variable X in the output variable, we calculate a proxy subcohort (hypothetical) by applying the following formula:

$$Cohort.X - \sum_{i=1}^{n} Subcohort_i.X$$

» The result calculated is stored in the output variables table as "Residue" for each cohort

» Accounting treatment: we can post at subcohort level and stay LDTI compliant, as subcohorts are now additive

# Management of subcohorts

## Counterintuitive results: cohort vs. subcohort

- Counterintuitive results:
  - One subcohort (Sub_02_A) is loss–making and induces an immediate charge
  - The other subcohort are sufficiently profitable
  - The cohort remain profitable
- Similar problem with LFPB floor

| Ldti Cohort Code/SubCohort | LFPB | K-Factor | Immediate Charge |
|---|---|---|---|
| Test_Cohort_02 | 7632290.51 | 87.44% | 0 |
| Sub_02_A | 4448463.32 | 104.41% | 2481355.6 |
| Sub_02_B | 2523879.59 | 85.94% | 0 |
| Sub_02_C | 2291360.1 | 72.66% | 0 |

Expect to be able to determine if ignore or not K-factor cap and LFPB floor at subcohort level

# 7 Conclusion

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