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ACHIEVING SUCCESS WITH POLYSYSTEMS

February 2020

In early January 2020, PolySystems announced its sixth software release supporting FASB's ASU 2018-12, commonly known as US GAAP ("GAAP") Long Duration Targeted Improvements ("LDTI"). Future LDTI-related enhancements will be released quarterly and reflect emerging industry practices and methodology.

LDTI shines a brighter light on modeled cash flows, making this release from PolySystems timely as it coincides with the December 2019 adoption of the Actuarial Standards Board's ("ASB") Actuarial Standard of Practice 56 ("ASOP 56") covering Modeling.

INDUSTRY ALERT! ASOP 56: MODELING

ASOP 56[1] was developed recognizing the importance of modeling applications in actuarial science and underwent four exposure periods, with over 100 comment letters submitted. ASOP 56 serves to provide guidance to actuaries when performing actuarial services related to the design, development, modification, evaluation, selection, use or review of any type of model.

ASOP 56 applies to the extent of the actuary's responsibilities, which may involve performing actuarial services related to an entire model or a subset of a model.

The ASB voted in December 2019 to adopt ASOP 56 effective for work performed on or after October 1, 2020. As a next step, the ASB will review ASOP 38, Catastrophe Modeling, for any changes necessitated by ASOP 56.

AN UPDATE ON POLYSYSTEMS' LDTI SOLUTION

BACKGROUND

LDTI represents the most significant revision to life insurance GAAP reporting in decades. The updated standard prescribes changes to liabilities for future policy benefits ("LFPBs"), Deferred Acquisition Costs ("DAC"), Market Risk Benefits ("MRBs") and increased disclosure requirements for a variety of product types. FASB's stated goal is to make the measurement of long duration liabilities less complex and financial statements more transparent.

SUMMARY OF LDTI KEY CHANGES

Given expanded disclosures and current measurement approaches, there will be a considerable impact on data requirements for actuarial models and post-model processes. For instance, if a company elects a full retrospective transition approach for implementing LFPBs, all historical experience data from contract inception is required.

1 ASOP 56 may be viewed here: http://lists.actuary.org/t/1284077/23691228/11011/2/

SUMMARY OF KEY CHANGES IN GAAP ACCOUNTING STANDARDS FOR LONG DURATION CONTRACTS

	TRAD LIFE (TERM, WL, LTC, DI)	NON TRAD LIFE (UL, VUL, IUL)	PAYOUT ANNUITIES	VARIABLE ANNUITIES	FIXED ANNUITIES
LFPBs					
Assumptions no longer locked in for FAS 60 business Discount rate uses an upper-medium grade security with the net effect to flow through OCI No provisions for adverse deviation and maintenance expenses Loss recognition no longer required for traditional contracts	✓	✗	✓	✗	✗
DAC					
DAC amortized on straight line basis Amortization based on individual contract or a grouped contract method Interest no longer accreted to balance Sales inducement assets, unearned revenue also follow new DAC guidance Terminal dividends accrued and recognized at constant rate basis DAC is no longer subject to an impairment testing	✓	✓	✓	✓	✓
MARKET RISK BENEFITS (MRBs)					
Protection for more than nominal capital market risk categorized as MRBs Fair value for all MRBs (including GMIB and GMDB) Fair value changes attributable to instrument-specific-credit risk reported in OCI Contracts that are not MRBs but meet the embedded derivative ("ED") definition follow ED FV guidance	✗	✗	✗	✓	✓
DISCLOSURES					
Disaggregated roll forwards required for LFPBs, DAC, MRBs and other balances MRB liabilities reported separate from other liabilities in the B/S and I/S Separate presentation of remeasurement gains/losses required in I/S Disclosures required on liability assumptions, judgments and methodology Qualitative and quantitative disclosures required for transition adjustments	✓	✓	✓	✓	✓

SUMMARY OF POLYSYSTEMS LDTI ENHANCEMENTS

PolySystems is comprised of modules addressing different components of actuarial processes across a range of purposes. Brief definitions of key PolySystems modules and acronyms are provided on the "Key PolySystems Terms" page for readers less familiar with the system.

The PolySystems LDTI solution has been integrated within the Annuity, Health, IncomePay and Life product suites, supported by additional PolySystems utilities that are generally product agnostic. To meet the requirements of LDTI, PolySystems has not only enhanced existing system functionality but also incorporated completely new software components and capabilities.
A number of GAAP valuation calculations have transitioned from the Master program to Delphi and Projection Reports programs given LDTI increases reliance on projections over formulaic methodologies.

KEY POLYSYSTEMS TERMS

MODULES

Horizon
A suite of programs that are configured to interact with insurance company front-end systems such as policy and claims administration systems. It is used to create and store historical data and to perform ETL functions required to create a model in-force file

Delphi
A product-specific actuarial cash flow projection program for both in-force and new business. The same coding structure used for valuation purposes can be shared with Delphi and generally be leveraged for projections with minimal coding effort

Projection Reports
Utilized to produce standardized reports at a user-defined level of granularity. The software can produce detailed unlocking reports for retrospective calculations (e.g., DAC under FAS97, LFPBs under LDTI) as well as full income statements and balance sheets

Future State Stochastic
Nested modeling software which leverages time-zero valuation processes to produce inner-loop values and incorporate them into outer-loop projections Capabilities include projecting key LDTI components such as LFPBs, DAC, and MRBs

Scenario Generator
Now includes a new risk-neutral generator that follows a log-normal forward model and can be leveraged for MRB calculations and projections

ACRONYMS

Policy Detail History (PDH)
PDH contains records of detailed history for transactions at the policy level, including items such as premiums paid, benefits paid and contract status

Valuation Master File (VMF)
VMF contains in-force information needed to perform formulaic reserve calculations; output details are also recorded to the VMF

Projection Master File (PMF)
PMF contains in-force information needed to perform cash flow projections; certain output details are also recorded to the PMF

Historical Cashflow File (HCF)
HCF contains periodic vectors of actual historical cash flows (e.g., premiums, benefits) summarized from the PDH at a user defined grouping level, generally starting at the inception of the group

Projection Cashflow File (PCF)
PCF contains periodic vectors of projected cash flows summarized at a user-defined grouping level, starting at the projection start date

Report Cashflow File (RCF)
RCF combines HCF and PCF into a full view of historical and projected cash flows, and transforms cash flows into reporting vectors (e.g., income statement and balance sheet vectors) that are summarized into reports by the Projection Reports program

The following summary considers PolySystems' handling of LDTI requirements along three key dimensions:

Data

A number of system enhancements and new programs have been developed to support the additional data requirements of LDTI, including:

- In Horizon, the data gathering functionality in place for FAS97 has been expanded to meet LDTI requirements and a new program "Build TI HCF" has been created to read the PDH and build the HCF.
- Enhancements to the "Create Projection Cells" utility and Horizon program have been made to allow flexibility in the treatment of rider and base policy records.
- The concept of "new entrants" has been introduced to handle new in-force policies since the prior valuation date to support attribution analysis and disclosure requirements.
- A new program "External Cash Flow Transformation" permits the use of cash flows generated outside Delphi modules and "Build HCF" programs and can be used to generate either the HCF or PCF. This functionality allows users to access the benefits of PolySystems reporting capabilities even if cash flows are sourced outside the software.

Projections

Relevant system changes include:

- Delphi programs have been updated to support the calculation methodology of LFPBs, DAC and MRBs under various basis and methodology options.
- New vectors have been added to support attribution analysis.[2]
- The "Future State Stochastic" module has been upgraded to project MRB balances along both inner and outer loop scenarios, thus enabling a sophisticated rollforward of MRB balances.

Reporting and disclosures

Significant new features have been added, including:

- Enhancements and new functionality to support (1) calculation of final GAAP metrics, (2) LDTI disclosure requirements, (3) unlocking and (4) attribution analysis.
- A new program "Seriatim TI Reserves" extracts cohort-level net-to-gross ratios from the RCFs, assigns the ratios to individual contracts and computes policy-level reserves for analysis purposes.
- A range of new reports detail the impact of LDTI-required adjustments, including the capping or flooring of certain values.
- Additions made to reporting capabilities in support of disclosures and rollforward requirements for market risk benefits.

More broadly, all necessary steps to produce LDTI metrics and disclosures can be specified through a "Launcher" file, which automates the requisite batch processing.

Looking forward, PolySystems is actively working on a range of future enhancements and anticipates additional development as either further guidance is provided by the FASB or companies' views solidify on specific aspects of the standards. The vendor's release notes describe some of the functionality still considered to be "work-in-progress" or pending additional guidance.

2 Horizon HCFs and Delphi PCFs each produce three sets of vectors, namely (1) all policy vectors, (2) existing policy vectors and (3) new entrant vectors. These vectors are then leveraged for attribution analysis and disclosures.

PolySystems LDTI enhancements span multiple modules and programs creating a comprehensive solution for LDTI modeling and reporting requirements. With the sixth release of PolySystems LDTI functionality in January 2020, insurers implementing LDTI within PolySystems have the necessary tools to plan and implement end-to-end actuarial modeling and financial reporting processes. Each company, however, should fully vet the system against desired methodologies, reporting requirements and other needs in order to proactively discuss any identified gaps with the software vendor. As feedback is provided and LDTI system enhancements are integrated over time, these modifications will continue to be made available to all users.

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PolySystems, Inc., shall have no liability in respect of the views and opinions expressed in this report.

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