EQUITABLE

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SUBJECT: Generator of Economic Scenarios (GOES) Exposure

Executive Summary
Equitable appreciates the opportunity to comment on the GOES acceptance criteria and offers the following initial observations. More detail on each is below.
1. <u>Treasury Model: Lower calibration percentiles in low starting interest rate conditions</u>: A key tenet of an appropriately calibrated treasury model is its ability to produce a wide range of plausible interest rates. To that end, we suggest modifications to the criteria to achieve an appropriate distribution of low and high interest rate scenarios, but particularly to maintain the potential for sustained low interest rates when starting interest rates are low.
2. <u>Equity Model: Introduce the equity and interest rate linkage</u>: The robustness of current criteria is limited by the lack of a linkage between equity returns and interest rates, which is a critical property of an economic scenario generator in its promotion of hedging and sound risk management in all interest rate environments, and to align with historical data.
3. <u>CTE Standard for Capital: Shift C3 Phase 2 capital to CTE 95 from CTE98</u>: Equitable suggests CTE95 as the measure to set C3 Phase 2 capital requirement instead of CTE98, as GOES reform (including the elements outlined above) introduces the more robust set of scenario outcomes necessary to assure regulators to adopt the original Oliver Wyman suggestion of CTE 95.

Treasury Model: A key tenet of the economic scenario generator is its ability to produce a wide variety of plausible interest rates. To achieve this goal, Equitable suggests the following acceptance criteria modifications:
- *Modify Low-and High-for-Long Criteria (T.5):* Equitable supports the intent of the chart in criteria T.5 but believes the values should be calibrated to reflect more low-for-long scenarios. The criteria set the 1st and 99th percentiles of the 10-year and 30-year geometric average of the 20-year UST. While basing criteria on an initial treasury rate and geometric average, rather than a point in time, is appropriate, we believe the distribution is not varied enough, especially at the low end.

  It is crucial that the generator consider the possibility that interest rates remain low (such as in a Japan scenario), as that is currently lacking in the Academy Interest Rate

Generator ("AIRG"). This appears somewhat lost in the T.5 requirements, as the chart assumes that when rates are at 1%, the first percentile of the 10-year average is less than .94% and the 30-year average is less than 1.5%. Equitable believes these values should be lower to account for situations where interest rates are below the starting point on average over time.

- *Removal of Criteria as of 12/31/20 (T.4)*: Equitable believes that having separate acceptance criteria for 12/31/20 starting conditions is redundant and confusing. For example, it is unclear if these criteria will be developed for starting conditions other than 12/31/20 and what the relationship is (if any) between these criteria and the criteria in T.5. Additionally, if criteria T.5 is appropriately calibrated as noted above, separate criteria for 12/31/20 starting conditions should not be required.

Equity Model:

- *Equity / interest rate linkage*: Equitable supports a structural linkage between interest rates and equity returns via an equity risk premium.

  Conceptually, the constant equity risk premium (ERP) approach, as utilized in the GEMS model, reflects the fact that a rational investor would demand expected equity returns in excess of those offered by risk-free assets to compensate for bearing such risk. A phenomenon where variations in risk free interest rates create highly varied, and at times even negative, equity risk premia. This result is a "real world" model that inarguably fails "real world" common-sense investor principles.

  Historically, we analyzed the relationship between interest rate and equity returns based on the 20-year UST rate and the S&P 500 index return, and the analysis indicated a positive relationship between the two. Exhibit A below shows the historical 20-year US treasury rates and the annualized 20-year return of the S&P index *in the following 20-year period*. We note that, in performing analysis regarding the relationship of interest rates and equities, it is important to look at the relationship between interest rates and *future* equity returns, not short-term relationships, as the valuation of insurance liabilities requires long-term projections. The data clearly evidences a high correlation between current interest rates and future equity returns. This is strongly supportive of a positive relationship between interest rates and equities as in the proposed Conning scenarios, as evidenced in Exhibit B, which shows a positive correlation between the average UST 20-year rates and 20-year projected cumulative Large Cap returns based on field test Scenario 1A (orange line). This is not existent under current AIRG model (black line).

Exhibit A: Correlation between historical Treasury Rates and Future Equity Returns (20yr UST 20 rates unavailable for '87-'89)
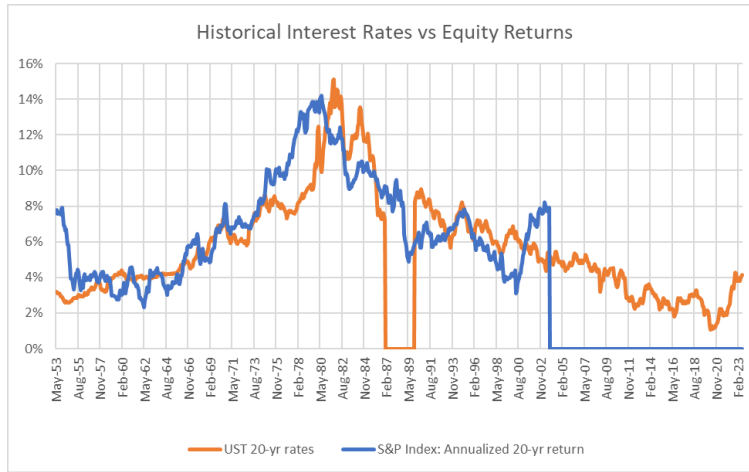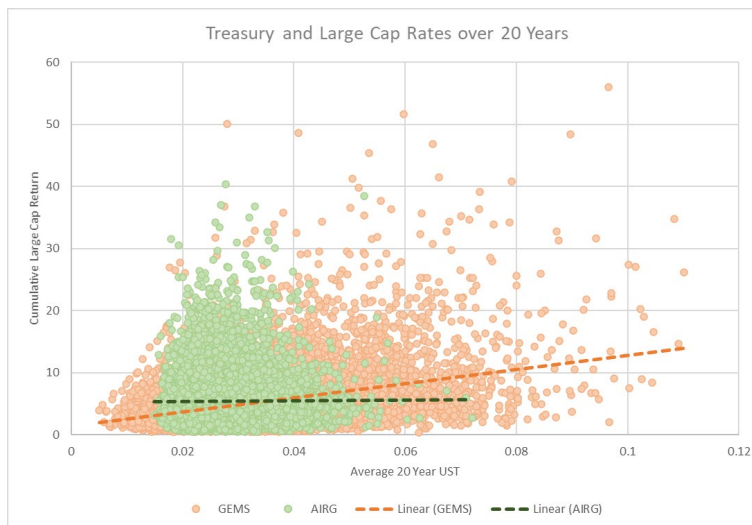

Exhibit B: GEMS vs current AIRG

Further, the rise in interest rates over the past several months has also demonstrated a clear effect of interest rates on equity valuations. The rise in interest rates depressed the value of many equity market sectors, as higher interest rates increased investor return requirements and expected future returns to justify investment in risky investments.

Lastly, and critically, a positive equity and interest rate linkage provides appropriate incentives for risk management. This linkage is consistent with industry fair value principles and promotes hedging by aligning the valuation of liabilities with that of instruments used to hedge liabilities.

- *Additional Gross Wealth Factors (GWF):* Equitable believes appropriately calibrated equity returns are critical to the generator. While we appreciate having GWF for the S&P 500, there was a lack of GWF for other indices, so Equitable would recommend acceptance criteria for other key equity indices, such as Russell 2000 (small cap), EAFE (international) and NASDAQ.

Corporate Bond Model: While Equitable did not perform a detailed review of the GEMS Corporate Bond Model, we believe the outcomes should be rendered consistent with General Account returns elsewhere in the Valuation Manual. The long-run high yield excess returns seemed beyond a rate we would consider prudent and may incentivize companies to increase separate account allocations to these risky sectors.

CTE 95 vs. CTE 98 for setting Risk Based Capital for Variable Annuities: Equitable proposes to shift to a CTE 95 measure for setting C3 Phase 2 capital for variable annuities instead of the CTE 98 together with the new GOES reform. During the development of the VM-21 framework, Oliver Wyman's original recommendation was to use CTE 95, the average of the worst 50 out of 1,000 scenarios. This recommendation was further noted that, to maintain sufficient prudence, the scenario generator must be enhanced to produce a broader range of financial outcomes.

This is addressed in the GOES reform as all scenario sets in the field test produced a much broader range of interest rates with equity scenarios being at least as prudent as AIRG. To illustrate that, we calculated the CTE 95 and CTE 98 for (1) the average 20-year UST rates over 20 years, (2) equity gross wealth factors over 20 years and (3) the value of a 20-year equity futures contract. Please see Exhibit C below for more details.
- *Interest rates*: the CTE 95 for the two primary scenario sets field tested (1a and 1b) are significantly lower than the CTE 98 from the AIRG, demonstrating the additional prudence in the GOES generator.
- *Equity Gross Wealth Factors*: the CTE 95 of the equity GWF under scenario sets 1a and 1b is lower than the CTE 95 of the AIRG GWF distribution, as expected, but remains higher than the CTE 98 under the AIRG.
- *Value of a 20-year Futures Contract:* Equitable calculated the CTE 95 and 98 of the value of a $1 at-the-money 20-year equity futures contract under both generators. As expected, given the more robust interest rate distribution and interest rate / equity linkage, the PV of the futures contract payoff is lower in the new GOES scenarios which reflects a higher cost of writing a long-term equity future contract or guarantee.

While the gross equity returns in the tested scenarios 1a and 1b *alone* are not significantly strengthened from the AIRG, given the much broader set of interest rate scenarios combined with the interest rate and equity linkage that ensures low-for-long rate scenarios are tested in tandem with poor equity returns, we believe that the CTE 95 of the GOES Scenarios would be more indicative of fair value and sufficiently prudent to serve as the C3 Phase 2 capital requirement as originally proposed by Oliver Wyman in lieu of the current CTE 98.

Exhibit C: CTE 98 vs. CTE 95 for tested scenarios

Avg. 20yr UST rate	GOES Scenario 1a	GOES Scenario 1b	AIRG
CTE 95	1.1%	1.2%	1.7%
CTE 98	0.9%	1.0%	1.6%

Equity GWF	GOES Scenario 1a	GOES Scenario 1b	AIRG
CTE 95	1.02	1.02	1.09
CTE 98	0.79	0.80	0.85

PV of Equity Futures Contract	GOES Scenario 1a	GOES Scenario 1b	AIRG
CTE 95	0.01	0.01	0.06
CTE 98	(0.18)	(0.18)	(0.11)

In addition, as Oliver Wyman noted and to which we agree, CTE 98 is challenged in that it is comprised of only 20 scenarios of the 1,000 scenarios typically analyzed. This small sample size makes it a less reliable measure of tail capital requirements and significantly more volatile compared to CTE 95. Equitable believes that, together with the new GOES, a CTE 95 measure for C3 Phase 2 capital requirements would result in a prudent framework that is meaningfully improved relative to the current standard.

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Equitable appreciates the opportunity to comment on this exposed proposal, and we look forward to testing scenarios in a second field test. We are available to discuss our comments further as desired.

Sincerely,

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