



# Initial Treasury Fit Discussion

Academy Economic Scenarios Work Group  
Weekly Meeting

May 10, 2024

# Initial Treasury Fit Approach

## Standard GEMS<sup>®</sup> approach

- Select 3 Pivot Tenors: 3-Month and 2 others that adjust each month
- Other 2 are selected to minimize gap between Fitted and Actual Spot Curves

# Adjustments for First Field Test

## Concern was raised about 1-Month Yield

- Extrapolated from 3-Month
- Could cause unexpected movements in Equity Returns
- So, Conning switched fixed Pivot from 3-Month to 1-Month

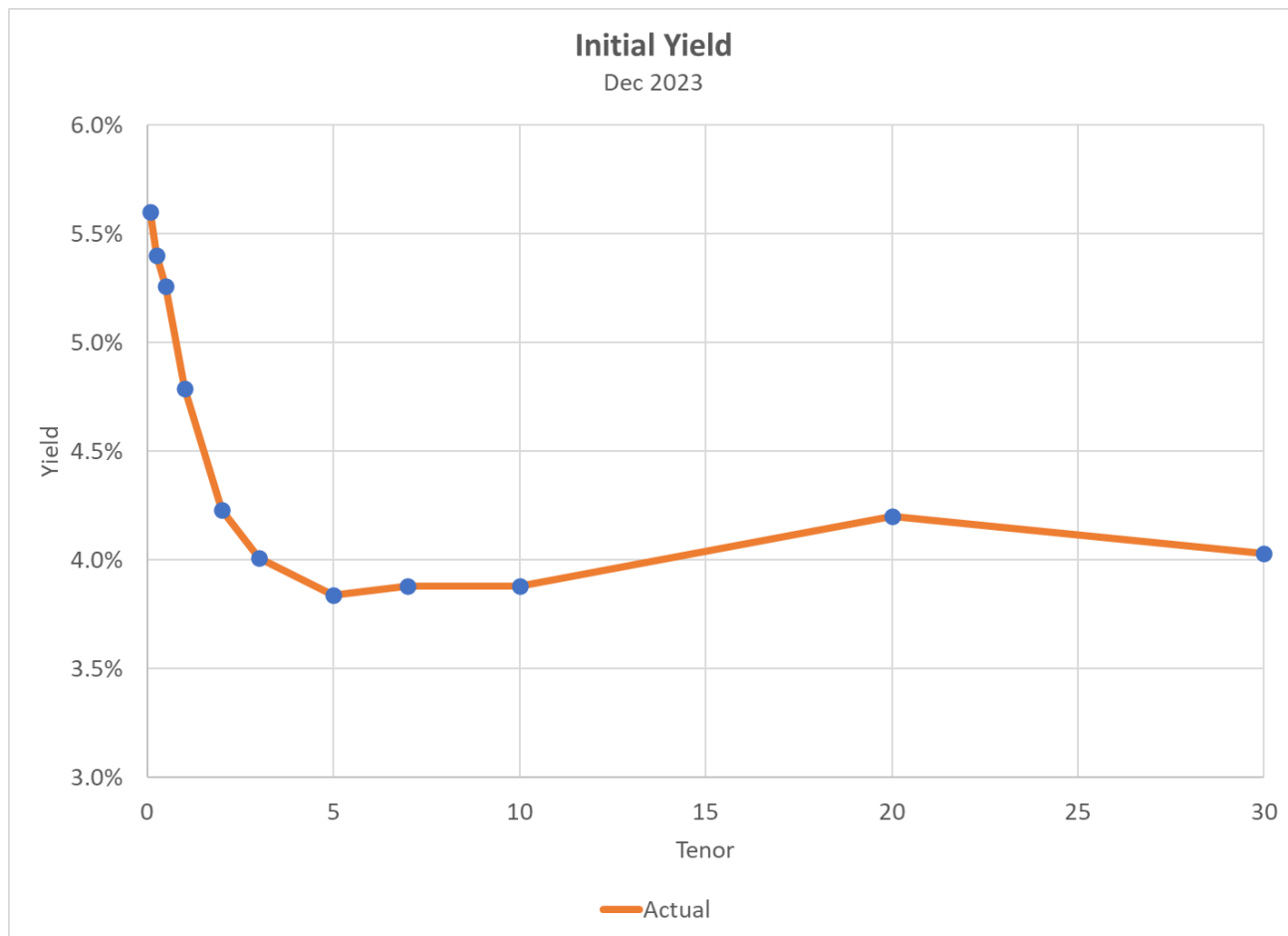
## Fitting process applies to unfloored spot rates

- Take actual Spot Rates
- Calculate rate needed to produce this result after flooring
  - E.g., in Dec 2021 runs, 6 bps Yield for 3-Month Treasury gets converted to -1.3%
- Fit these “unfloored” Spot Rates
- Tends to over emphasize short rates in these situations
- So, Conning switched to using Par Yields

# Impact on December 2023 Fitting

## Unusual initial curve

- Inverted out to 10-Year
- Sharply increases to 20-Year
- Drops back down for 30-Year



Prepared by Conning, Inc. Source: U.S. Department of the Treasury (2024)

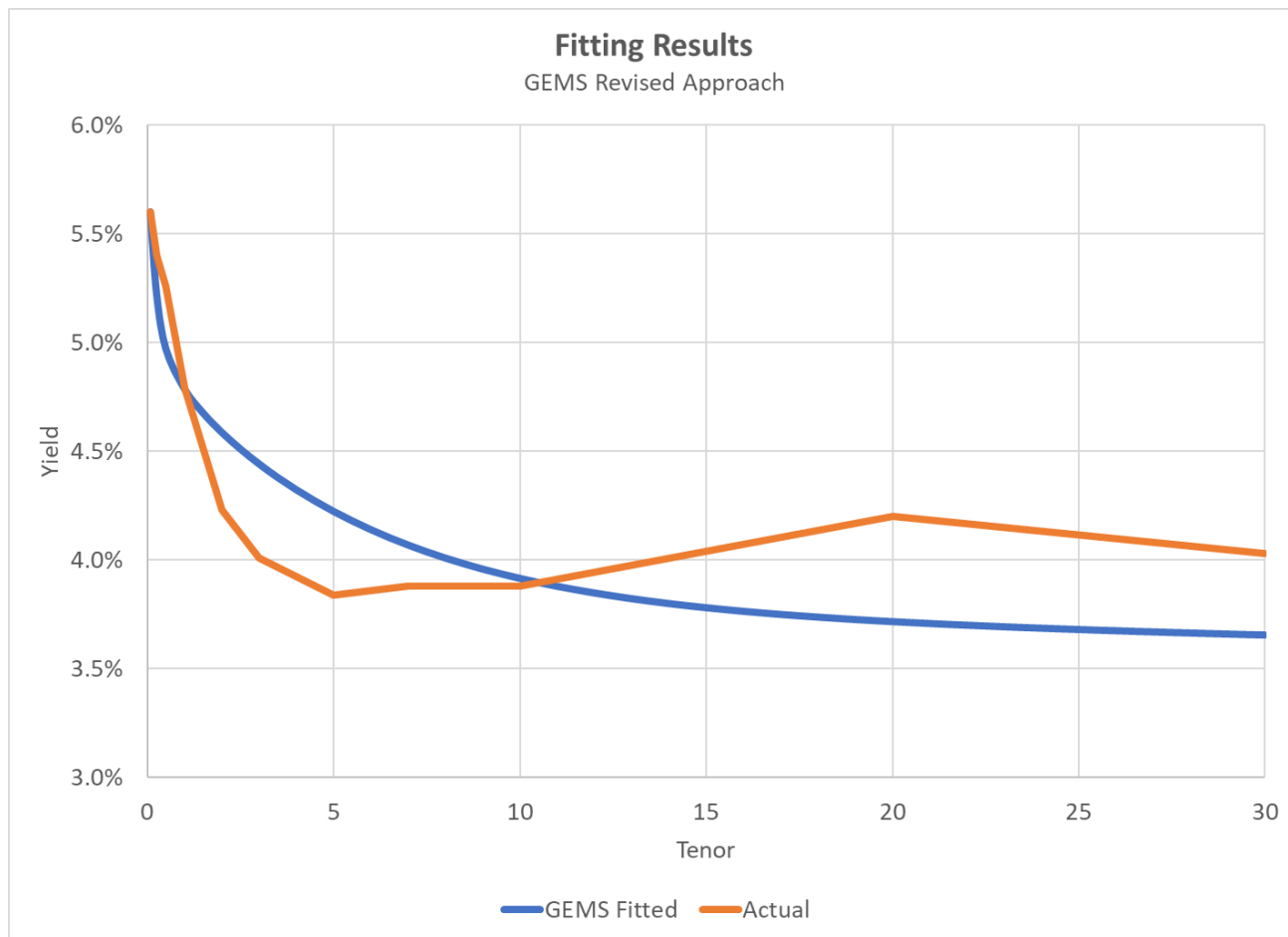
# Impact on December 2023 Fitting

## Unusual initial curve

- Inverted out to 10-Year
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## GEMS<sup>®</sup> revised approach

- Selects 1- and 10-Year Pivots
- Balances being above in mid range with being below on long end

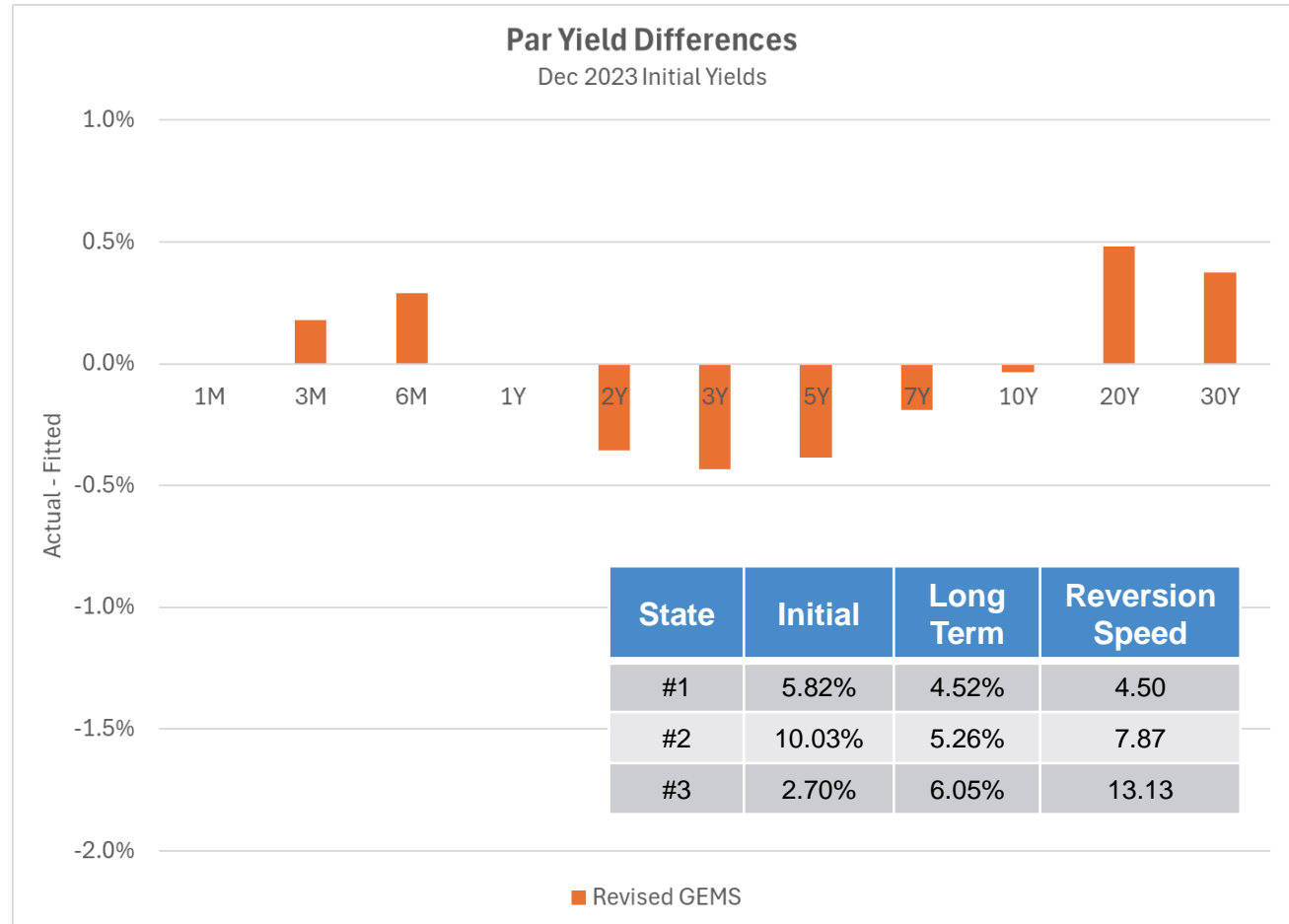


Prepared by Conning, Inc. Sources: U.S. Department of the Treasury (2024), GEMS<sup>®</sup> Economic Scenario Generator scenarios.,

# Impact on December 2023 Fitting – State Variables

## Unusual initial curve

- Leads to unusual initial values
- Mix of above and below target values
- Relatively large mismatch between Fitted and Actual

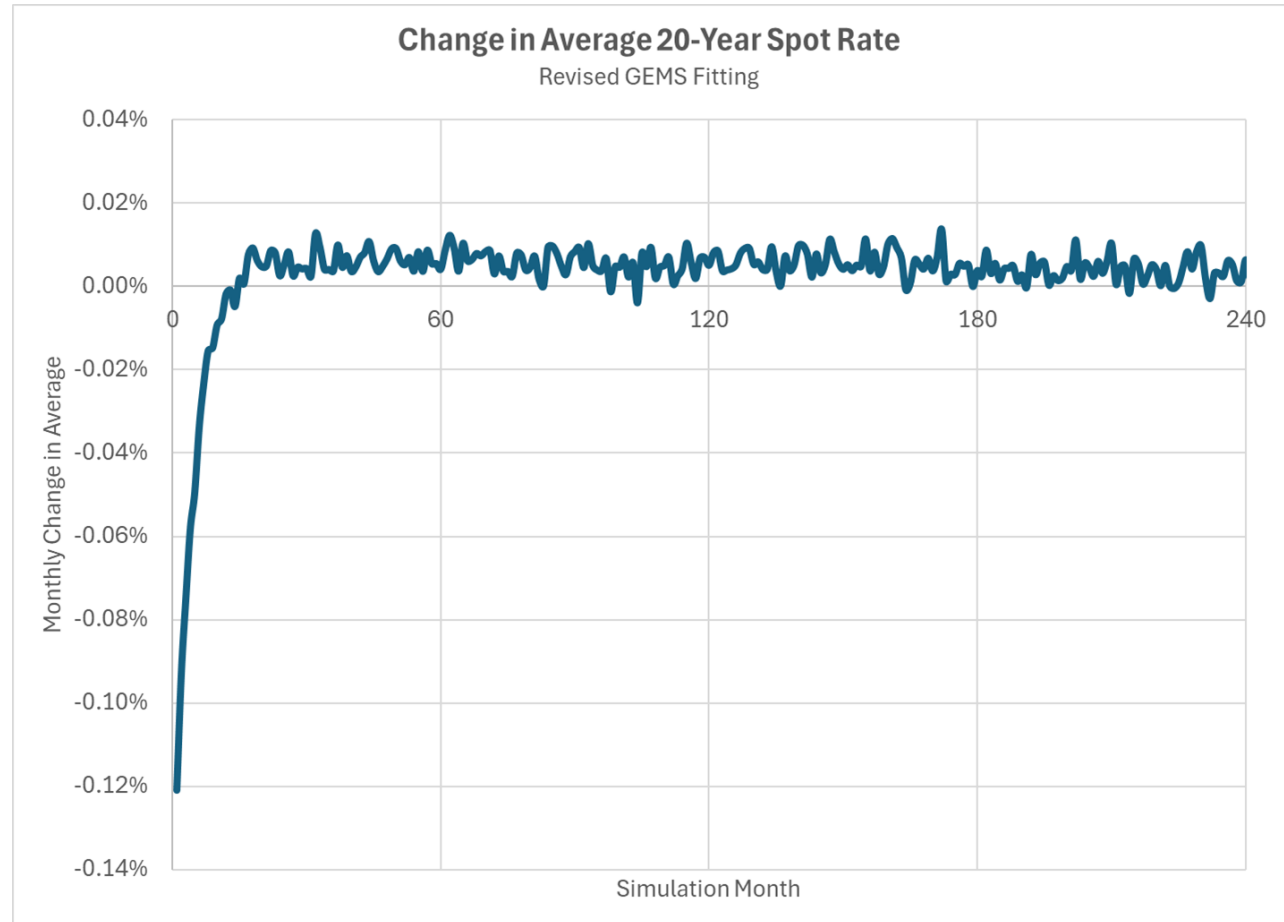


Prepared by Conning, Inc. Source: GEMS® Economic Scenario Generator scenarios.

# Impact on December 2023 Fitting – State Variables

## Unusual initial curve

- Leads to unusual initial values
  - Mix of above and below target values
  - Relatively large mismatch between Fitted and Actual
- Creates potential for non-linear movements in averages



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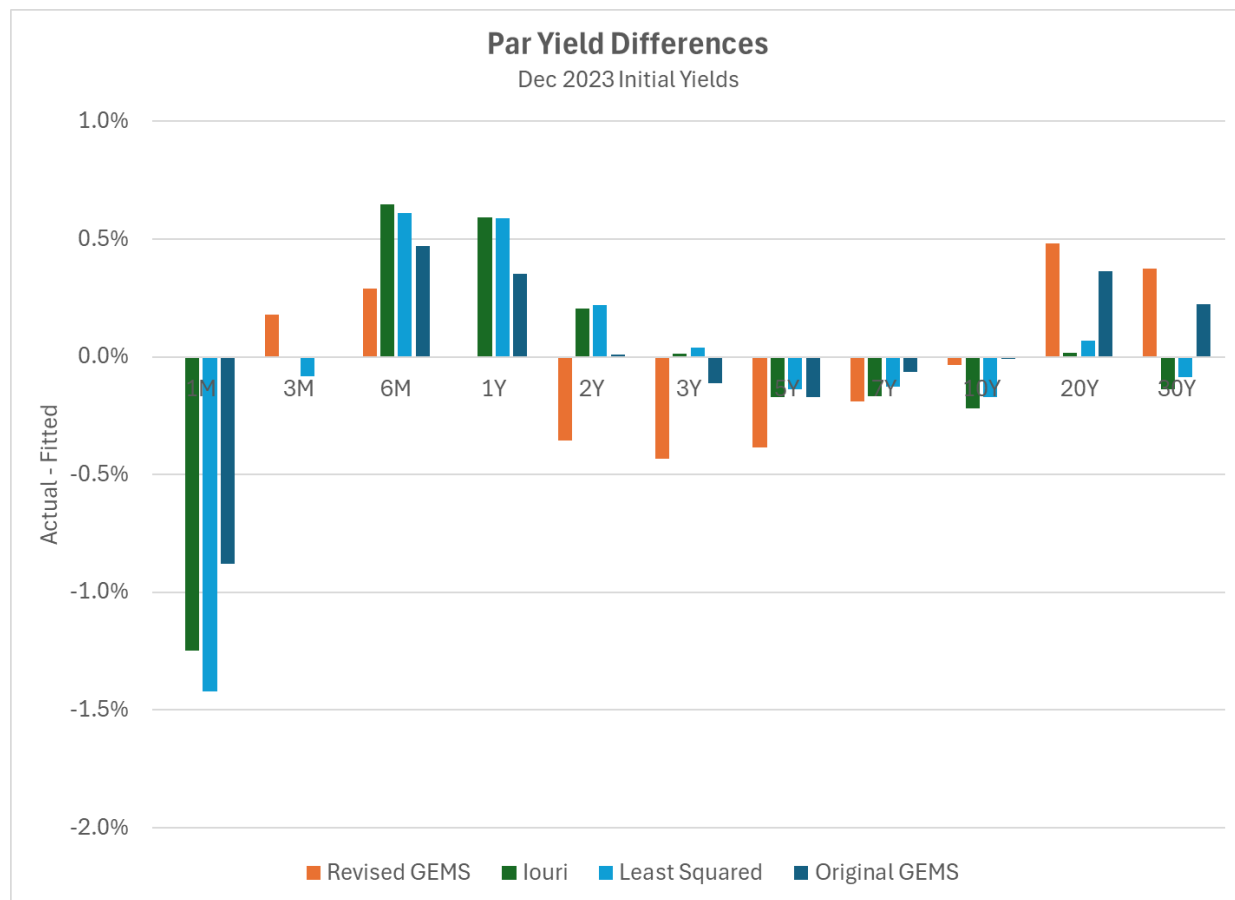
# Impact on December 2023 Fitting – Alternative Methods

## Compared three other methods

- Original Conning approach
- Least Squares Fitting
- Proposal from Iouri Karpov

## Observations

- Removal of 1-Month from fitting creates mismatch for all
- Tradeoffs for the rest of the curve include a better fit or the long end and a worse fit for the short end



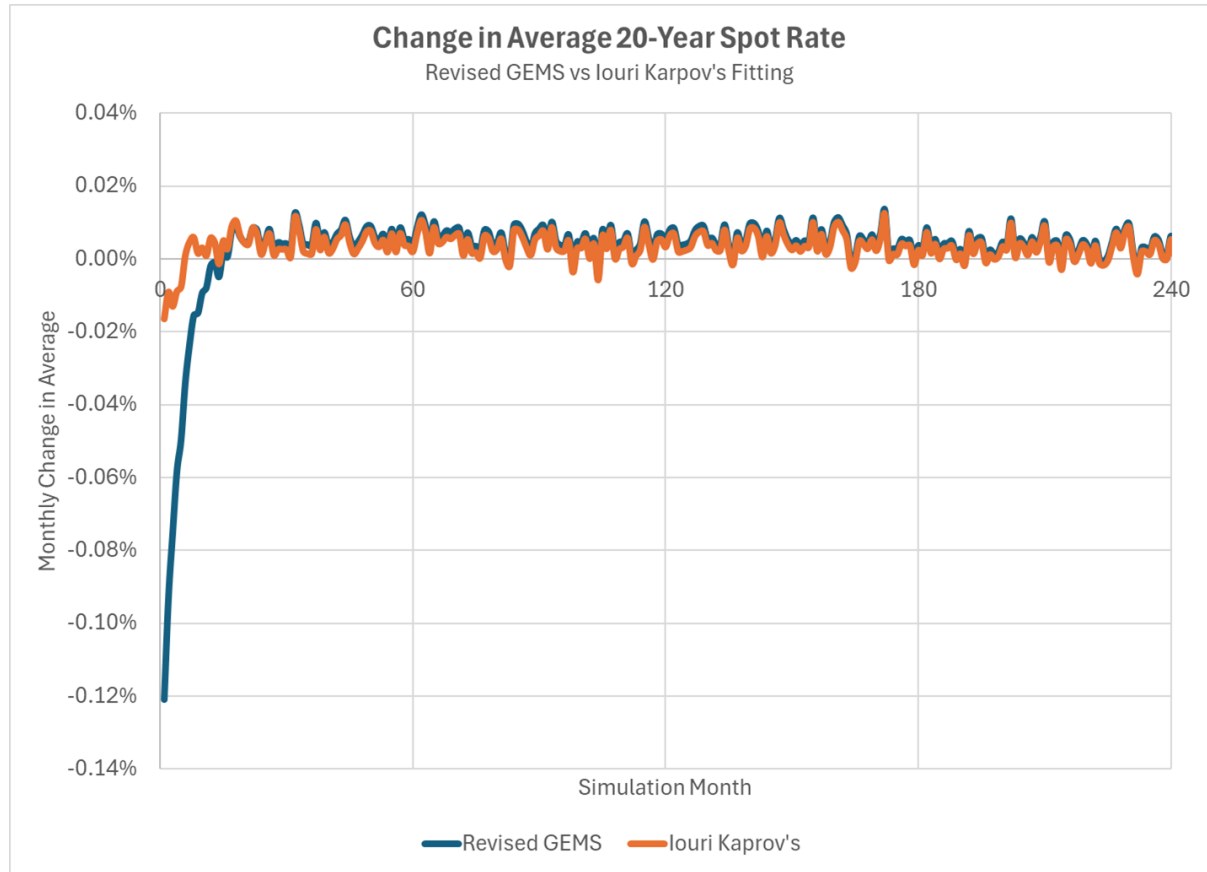
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# Impact on December 2023 Fitting – Average Yields

## Different fits create different behaviors

- louri Karpov's calibration has a better initial fit on 20-Year reduced swings in averages

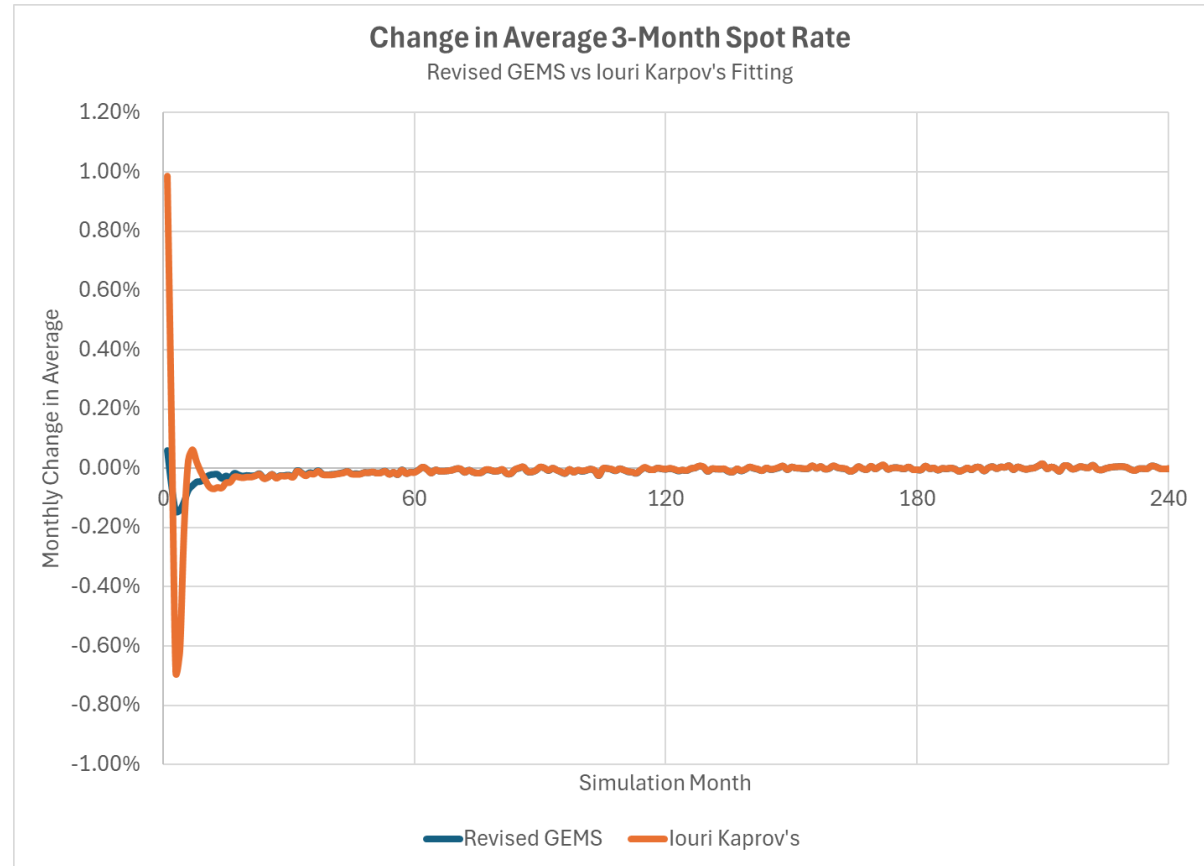


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# Impact on December 2023 Fitting – Average Yields

## Different fits create different behaviors

- Iouri Karpov's calibration has a better initial fit on 20-Year reduced swings in averages
- The tradeoff is huge swings for the short end of the curve



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