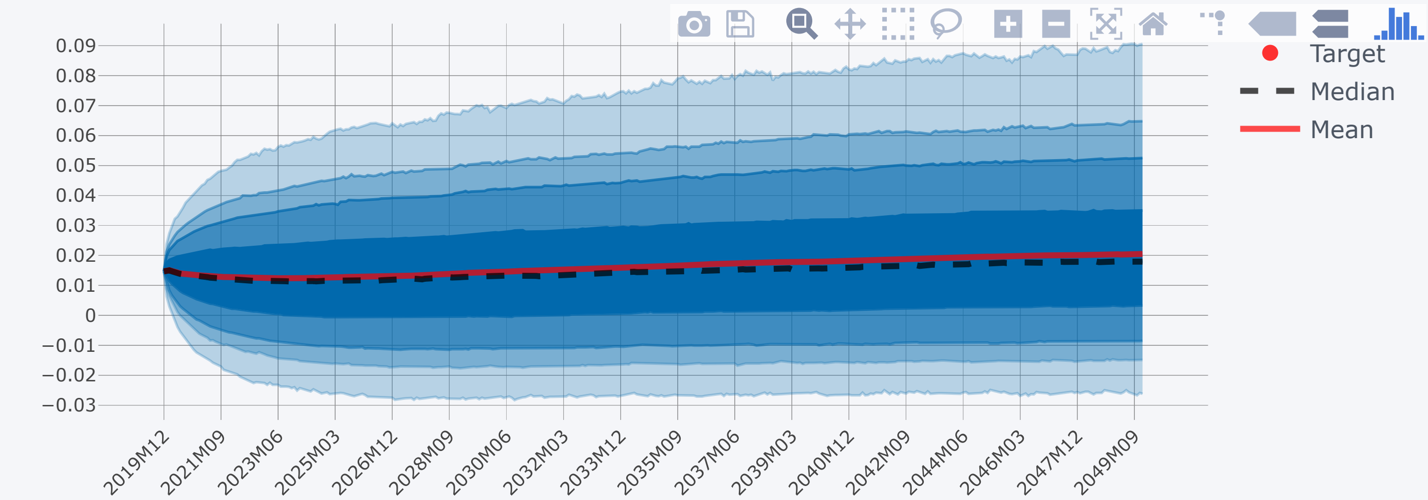
US Treasury 1 Month Yield - Spot

Conning | Risk Solutions

2019 Q4

Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

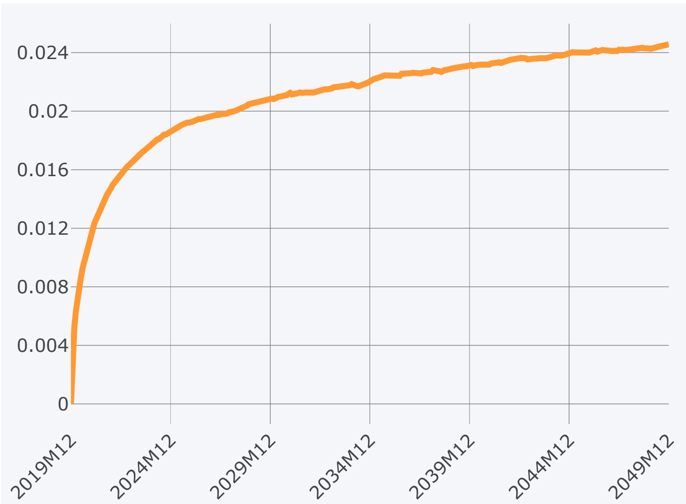
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

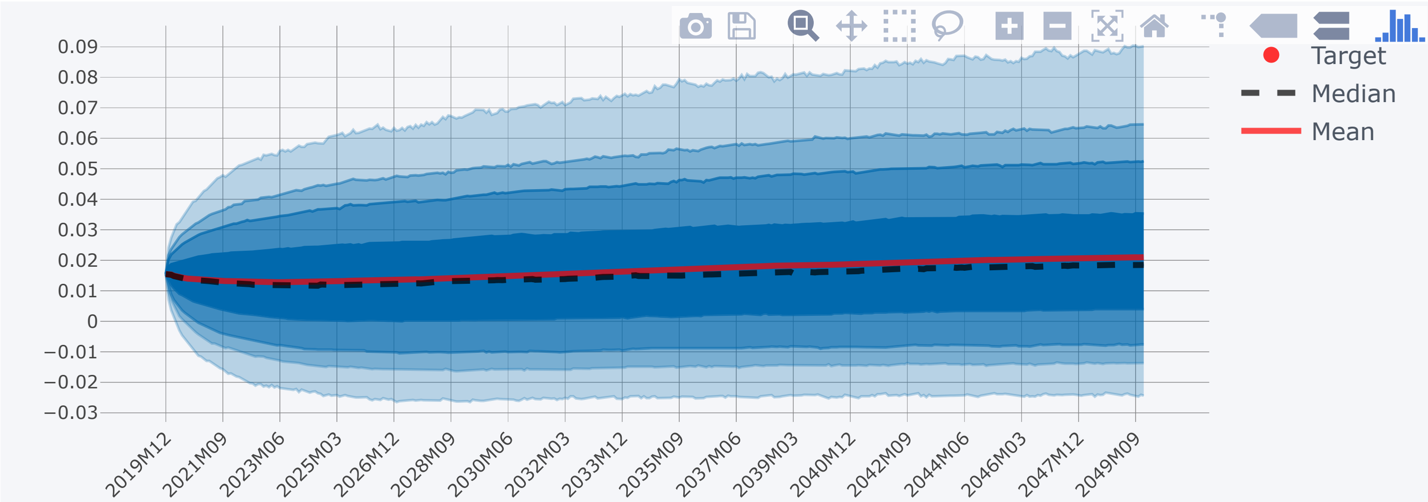
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0133	0.0144	0.0179	0.0205
std	0.0116	0.0209	0.0231	0.0246
min	-0.0268	-0.0487	-0.0457	-0.0464
1%	-0.0124	-0.0276	-0.0256	-0.0262
5%	-0.0052	-0.0168	-0.0157	-0.0149
10%	-0.0014	-0.0111	-0.0097	-0.0085
25%	0.0054	-0.0002	0.0015	0.0033
50%	0.0132	0.013	0.0156	0.0179
75%	0.021	0.0278	0.0317	0.035
90%	0.0283	0.0421	0.0486	0.0525
95%	0.0326	0.051	0.0603	0.0648
99%	0.0412	0.0678	0.0805	0.0906
max	0.066	0.1276	0.1328	0.1601

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

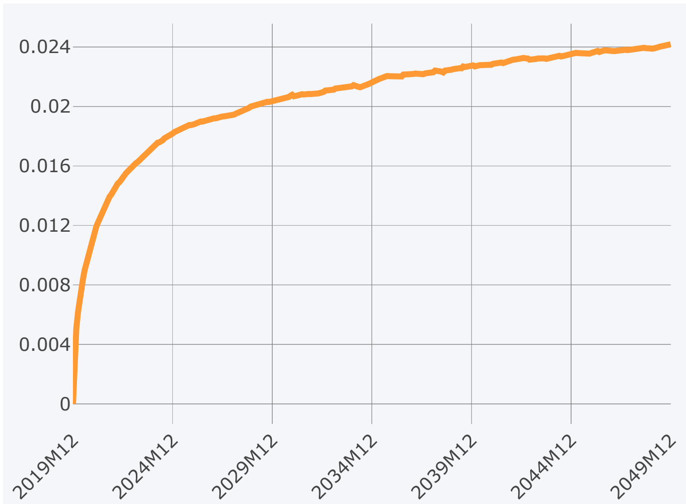
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0137	0.015	0.0185	0.021
std	0.0112	0.0204	0.0227	0.0242
min	-0.0248	-0.0463	-0.0419	-0.0456
1%	-0.0113	-0.0258	-0.024	-0.0244
5%	-0.0043	-0.0156	-0.0145	-0.0137
10%	-0.0005	-0.0102	-0.0086	-0.0076
25%	0.006	0.0005	0.0023	0.004
50%	0.0135	0.0134	0.0161	0.0185
75%	0.0212	0.028	0.0319	0.0353
90%	0.0283	0.0421	0.0483	0.0525
95%	0.0324	0.0508	0.0603	0.0646
99%	0.0407	0.0677	0.0809	0.0902
max	0.0658	0.1256	0.1326	0.1614

Cross Sectional Volatility Over Time



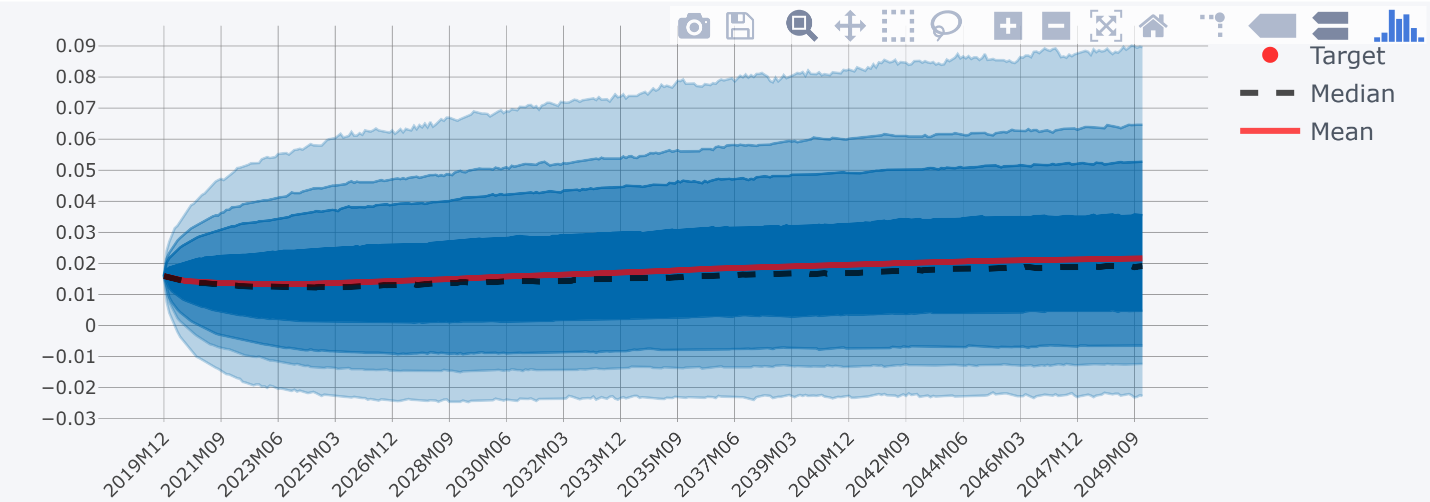
US Treasury 6 Month Yield - Spot

Conning | Risk Solutions

2019 Q4

Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

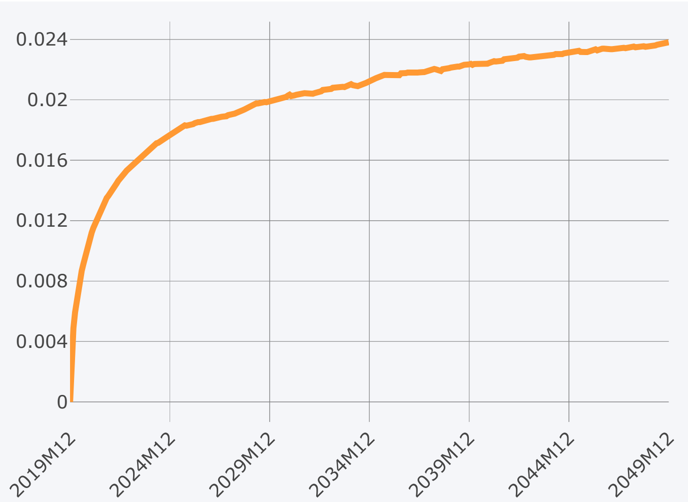
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0141	0.0155	0.0191	0.0216
std	0.0109	0.0199	0.0223	0.0238
min	-0.0231	-0.0437	-0.0383	-0.0443
1%	-0.0101	-0.0241	-0.0227	-0.0227
5%	-0.0033	-0.0144	-0.0133	-0.0124
10%	0.0004	-0.009	-0.0074	-0.0065
25%	0.0066	0.0014	0.0033	0.0047
50%	0.0139	0.014	0.0167	0.0191
75%	0.0213	0.0281	0.0322	0.0355
90%	0.0282	0.0421	0.0486	0.0527
95%	0.0322	0.0504	0.0602	0.0646
99%	0.0403	0.0673	0.0809	0.0896
max	0.065	0.1236	0.1324	0.1624

Cross Sectional Volatility Over Time



US Treasury 1 Year Yield - Spot

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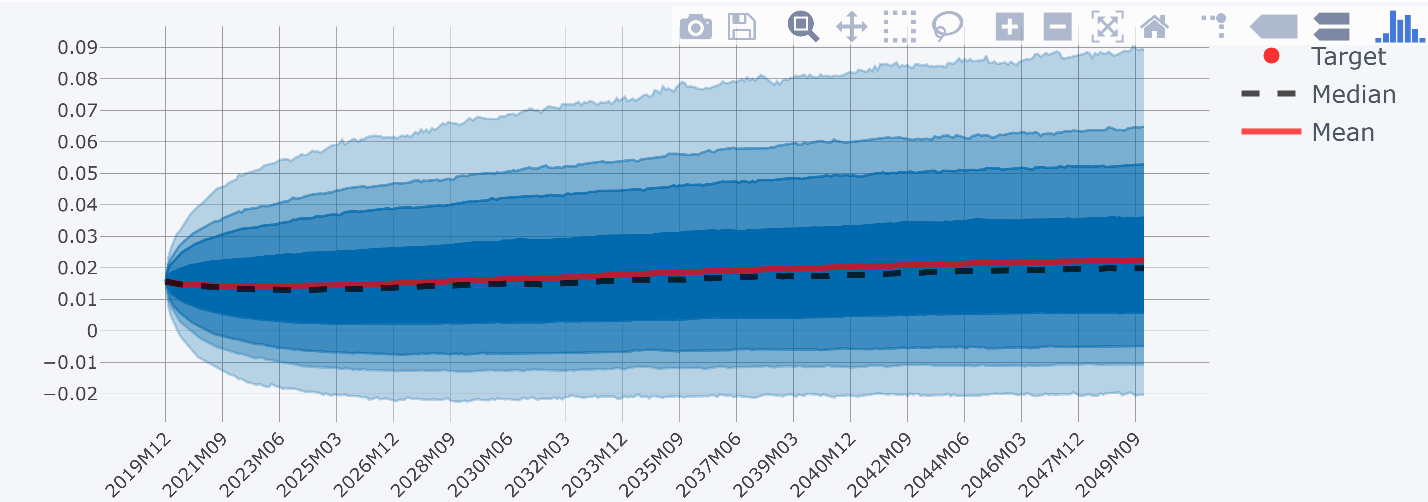
2019 Q4

Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

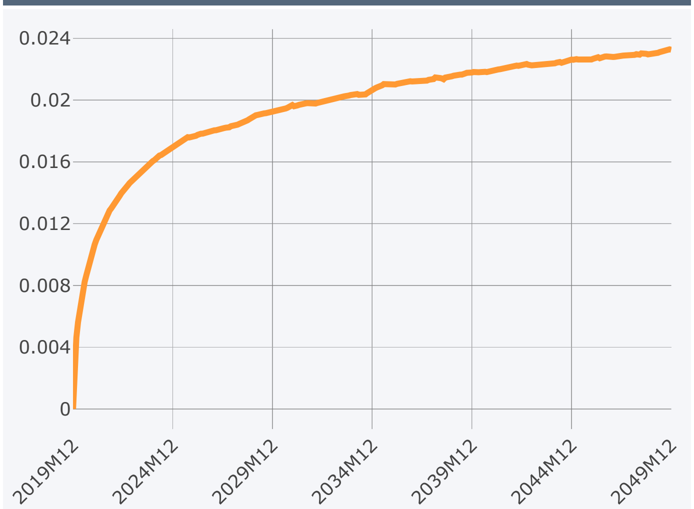
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0146	0.0163	0.0199	0.0224
std	0.0103	0.0193	0.0218	0.0233
min	-0.0213	-0.04	-0.0341	-0.0414
1%	-0.0084	-0.0215	-0.0202	-0.0203
5%	-0.0019	-0.0124	-0.0114	-0.0106
10%	0.0016	-0.0073	-0.0059	-0.0048
25%	0.0075	0.0027	0.0044	0.0058
50%	0.0144	0.0148	0.0175	0.0199
75%	0.0214	0.0285	0.0327	0.0359
90%	0.0279	0.0421	0.0488	0.0528
95%	0.0319	0.0501	0.0601	0.0648
99%	0.0396	0.0673	0.0803	0.0893
max	0.0633	0.121	0.1323	0.163

Cross Sectional Volatility Over Time



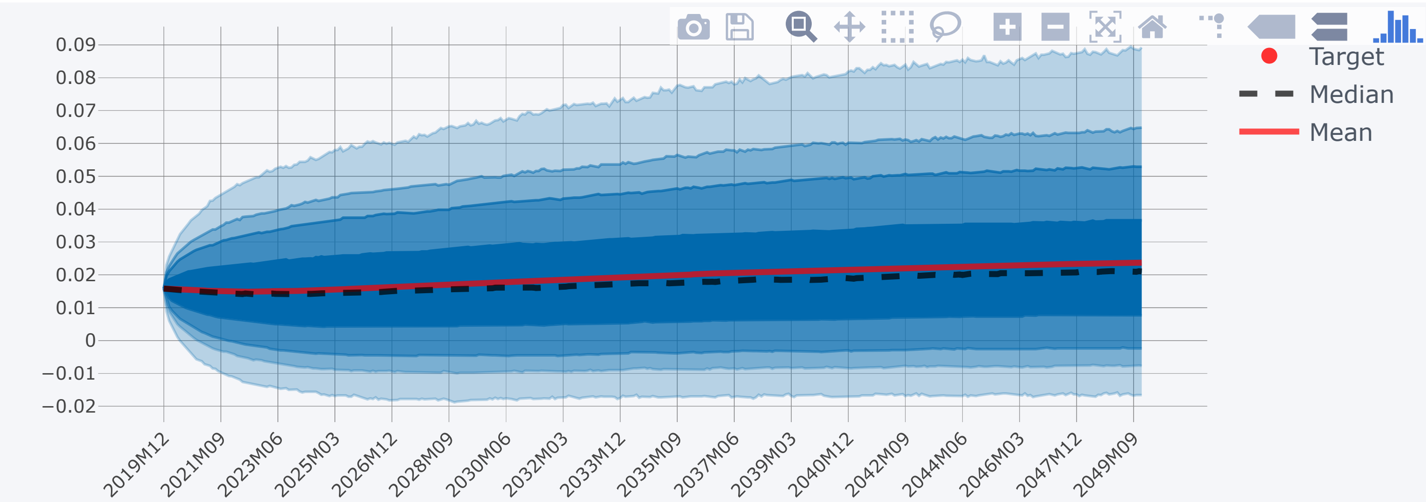
US Treasury 2 Year Yield - Spot

Conning | Risk Solutions

2019 Q4

Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

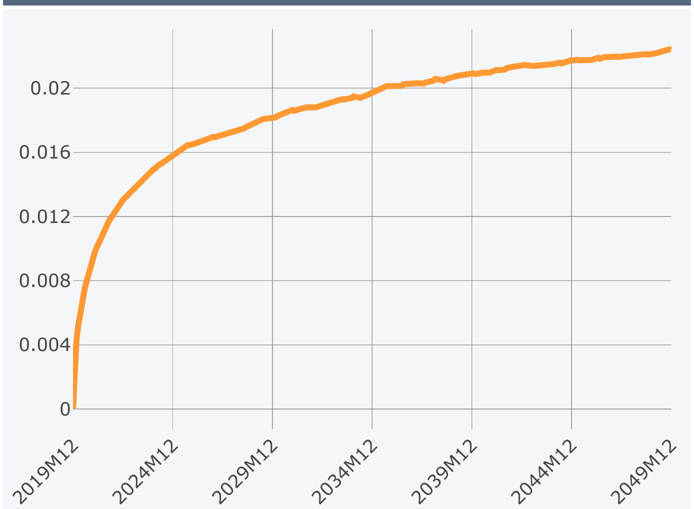
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

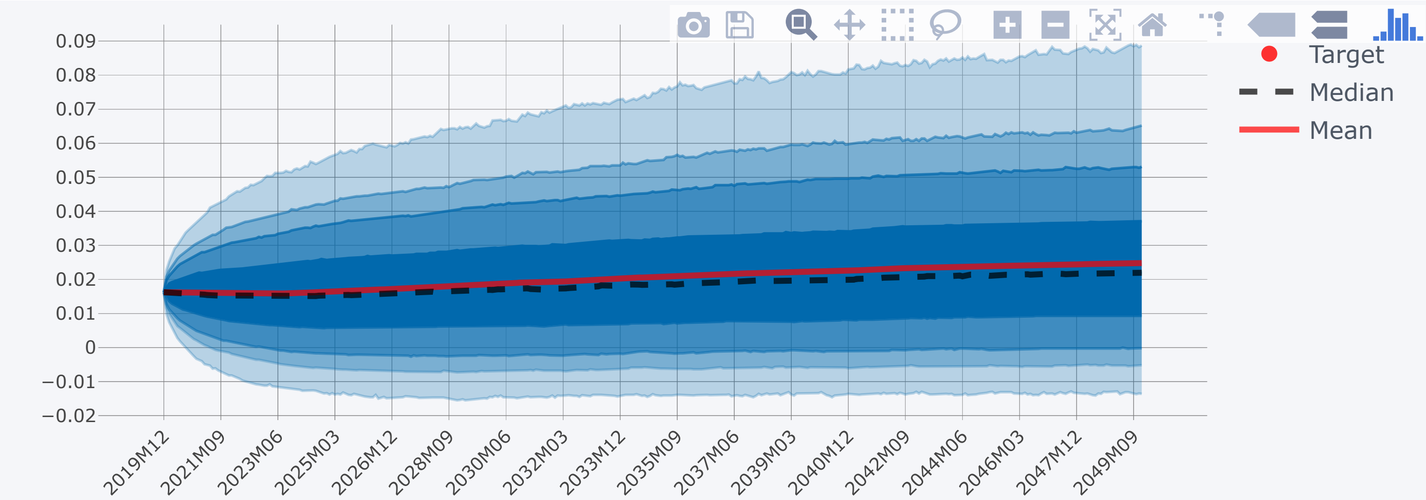
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0153	0.0175	0.0212	0.0237
std	0.0094	0.0182	0.0209	0.0224
min	-0.0178	-0.0343	-0.0291	-0.0361
1%	-0.0057	-0.0176	-0.0165	-0.0166
5%	0.0002	-0.0095	-0.0084	-0.0077
10%	0.0034	-0.0046	-0.0032	-0.0024
25%	0.0088	0.0046	0.0064	0.0077
50%	0.0151	0.016	0.0186	0.021
75%	0.0216	0.0289	0.0333	0.0366
90%	0.0276	0.0418	0.0491	0.0529
95%	0.0311	0.0496	0.06	0.0648
99%	0.0382	0.066	0.0802	0.0892
max	0.0599	0.1174	0.1341	0.1631

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

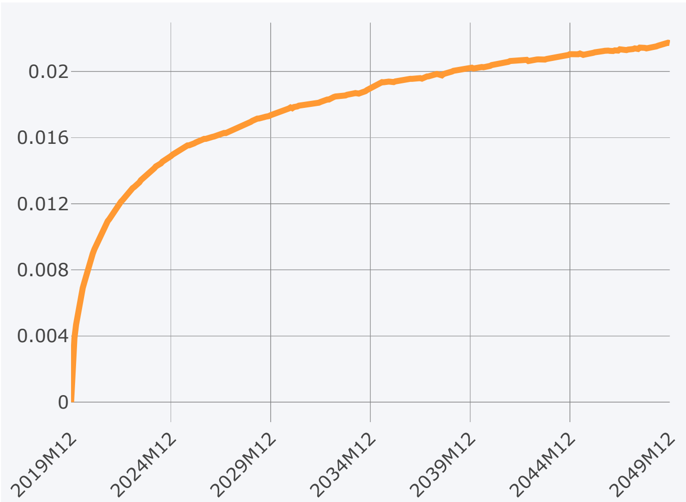
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

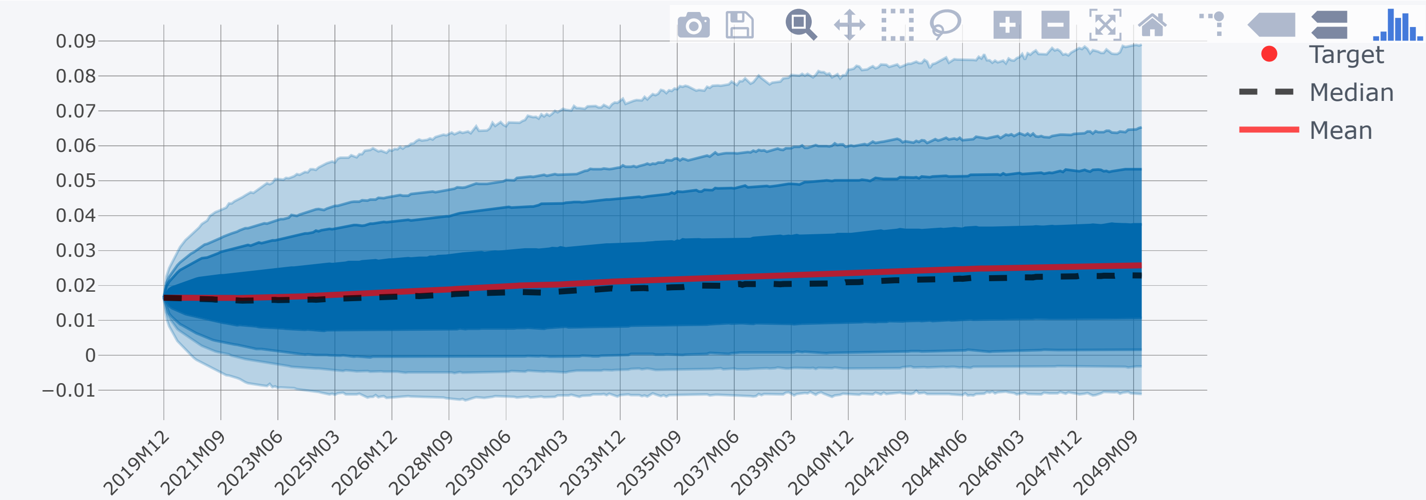
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0159	0.0186	0.0223	0.0248
std	0.0087	0.0174	0.0202	0.0217
min	-0.0149	-0.0297	-0.0252	-0.0314
1%	-0.0033	-0.0145	-0.0137	-0.0136
5%	0.0021	-0.0068	-0.0059	-0.0052
10%	0.0049	-0.0026	-0.001	-0.0002
25%	0.01	0.0063	0.0079	0.0093
50%	0.0157	0.017	0.0196	0.022
75%	0.0217	0.0292	0.0339	0.0371
90%	0.0271	0.0418	0.0495	0.0531
95%	0.0305	0.0493	0.06	0.0652
99%	0.0369	0.0651	0.0802	0.0887
max	0.0569	0.1149	0.1358	0.1629

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

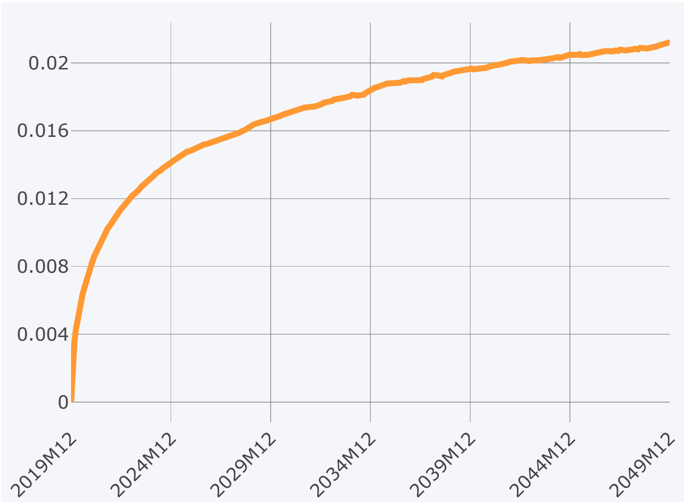
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

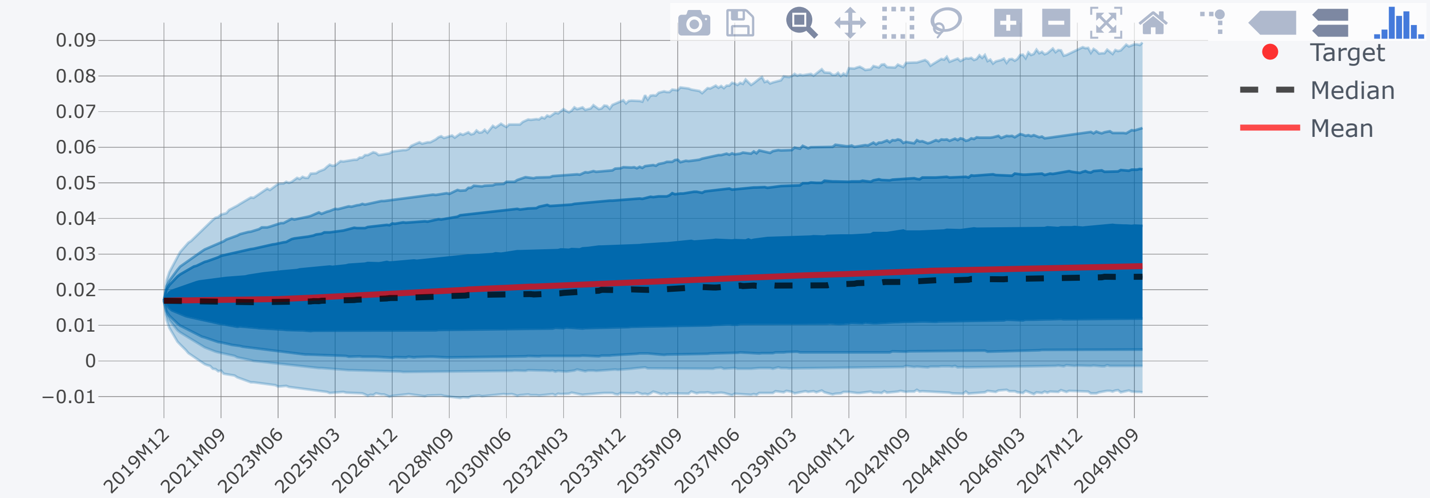
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0165	0.0195	0.0233	0.0258
std	0.0081	0.0167	0.0196	0.0212
min	-0.0122	-0.0257	-0.0217	-0.0274
1%	-0.0013	-0.0118	-0.0113	-0.0111
5%	0.0037	-0.0047	-0.0039	-0.0032
10%	0.0063	-0.0007	0.0008	0.0016
25%	0.0109	0.0077	0.0092	0.0107
50%	0.0163	0.0179	0.0204	0.0229
75%	0.0219	0.0296	0.0344	0.0375
90%	0.0269	0.0419	0.0497	0.0533
95%	0.0301	0.0492	0.0602	0.0653
99%	0.0359	0.065	0.0803	0.089
max	0.0544	0.1166	0.1372	0.1626

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

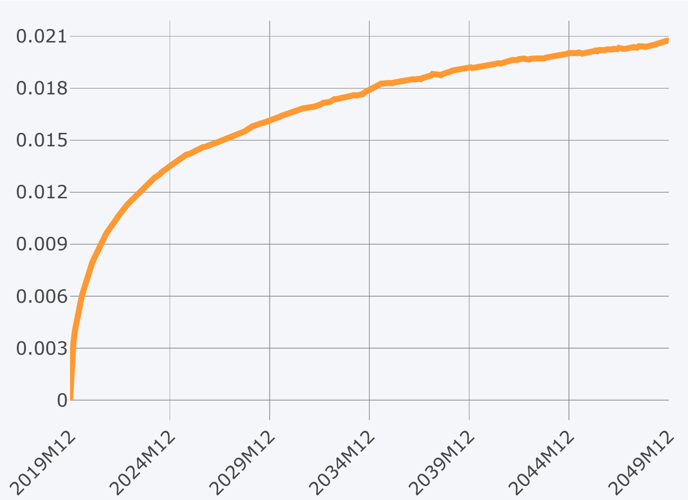
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

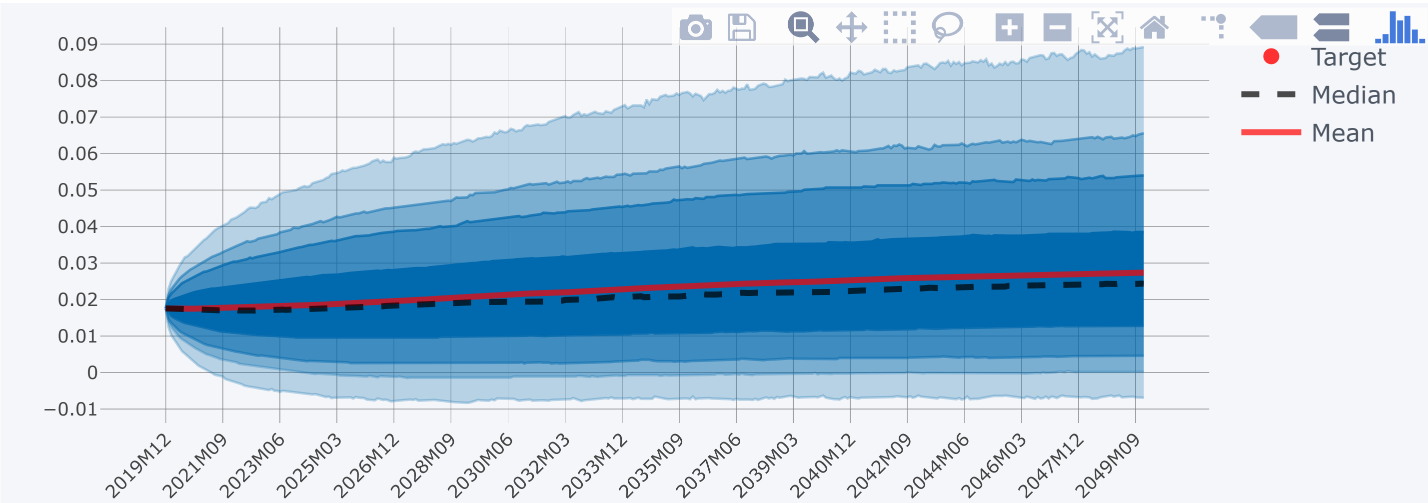
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.017	0.0204	0.0241	0.0266
std	0.0076	0.0161	0.0192	0.0207
min	-0.0099	-0.0222	-0.0186	-0.0238
1%	0.0005	-0.0094	-0.0088	-0.0088
5%	0.005	-0.0029	-0.002	-0.0014
10%	0.0074	0.001	0.0023	0.0032
25%	0.0118	0.0089	0.0104	0.0119
50%	0.0168	0.0187	0.0212	0.0236
75%	0.0221	0.03	0.0349	0.0379
90%	0.0267	0.0419	0.05	0.0538
95%	0.0297	0.0493	0.0603	0.0654
99%	0.0352	0.0651	0.0808	0.0894
max	0.0523	0.118	0.1383	0.1622

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



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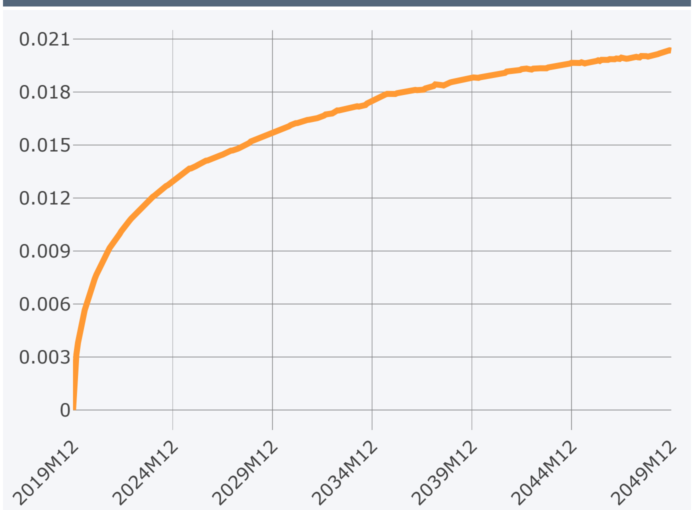
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

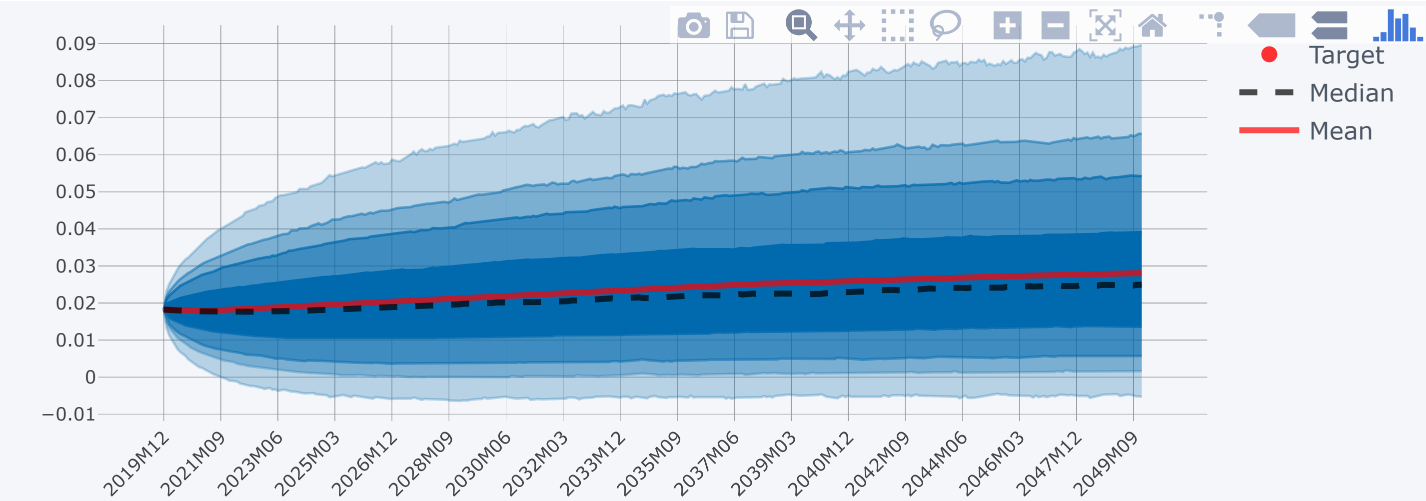
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0175	0.0211	0.0249	0.0274
std	0.0072	0.0157	0.0188	0.0204
min	-0.0078	-0.0192	-0.0158	-0.0207
1%	0.0019	-0.0074	-0.0068	-0.0069
5%	0.0062	-0.0013	-0.0005	0.0002
10%	0.0085	0.0024	0.0038	0.0046
25%	0.0126	0.0099	0.0115	0.0128
50%	0.0173	0.0194	0.0218	0.0243
75%	0.0223	0.0305	0.0355	0.0385
90%	0.0268	0.042	0.0504	0.054
95%	0.0295	0.0495	0.0606	0.0656
99%	0.0347	0.0648	0.0809	0.0892
max	0.0505	0.1191	0.1391	0.1619

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

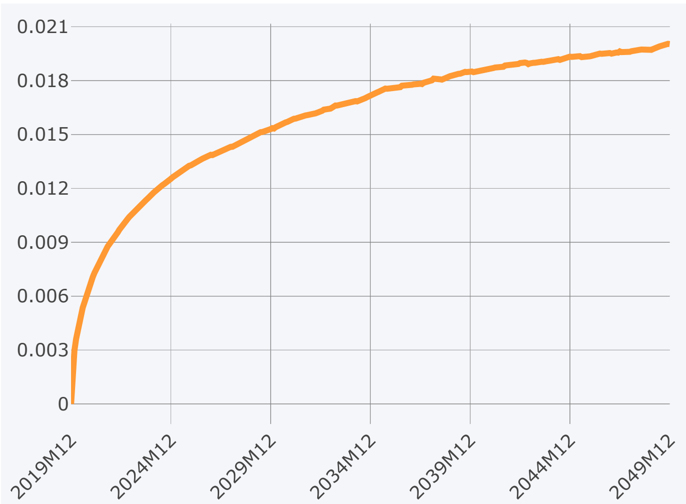
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

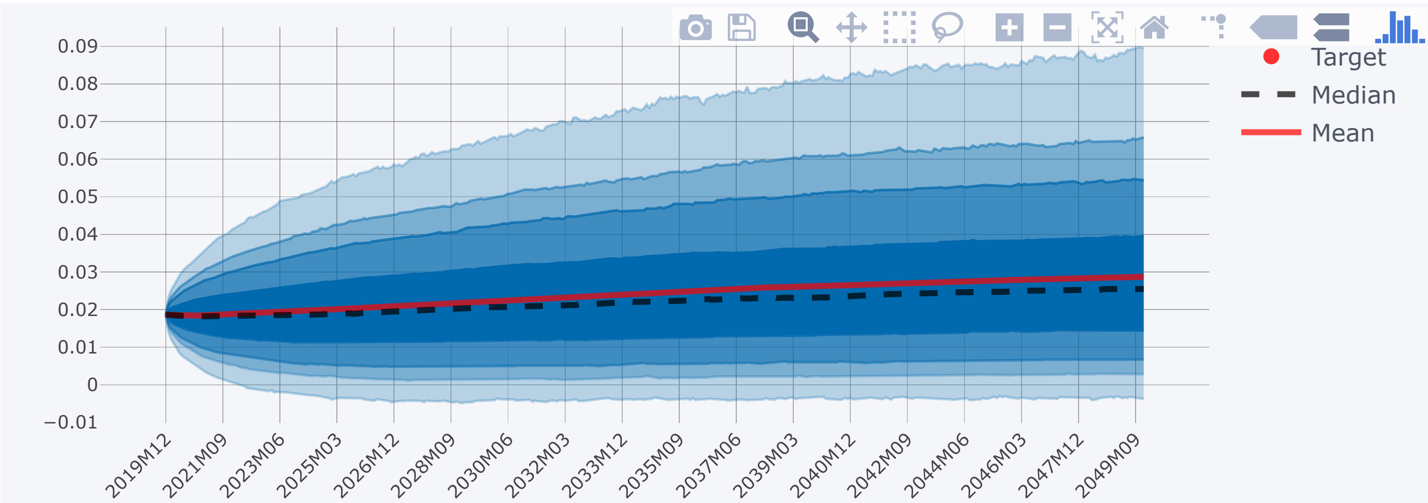
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.018	0.0218	0.0256	0.0281
std	0.0068	0.0153	0.0185	0.02
min	-0.006	-0.0165	-0.0134	-0.018
1%	0.0032	-0.0057	-0.0051	-0.0053
5%	0.0072	0.0001	0.001	0.0016
10%	0.0094	0.0037	0.005	0.0057
25%	0.0133	0.0108	0.0124	0.0136
50%	0.0178	0.0201	0.0224	0.0249
75%	0.0225	0.0309	0.0359	0.0391
90%	0.0268	0.0421	0.0507	0.0542
95%	0.0294	0.0499	0.0607	0.0656
99%	0.0345	0.065	0.0809	0.0896
max	0.049	0.1201	0.1398	0.1615

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

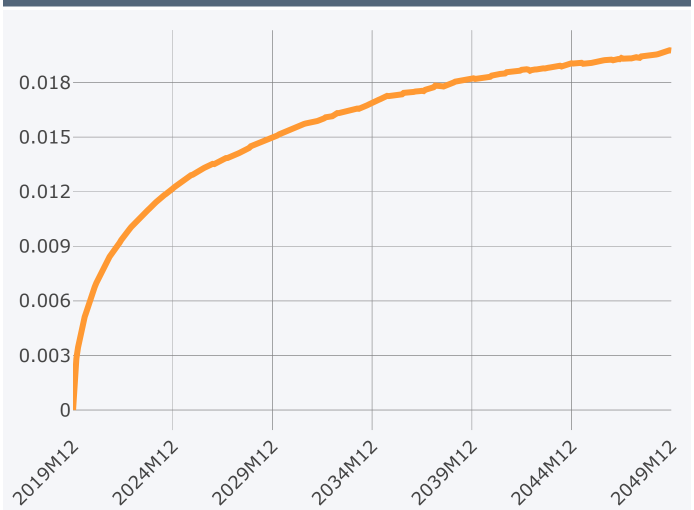
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

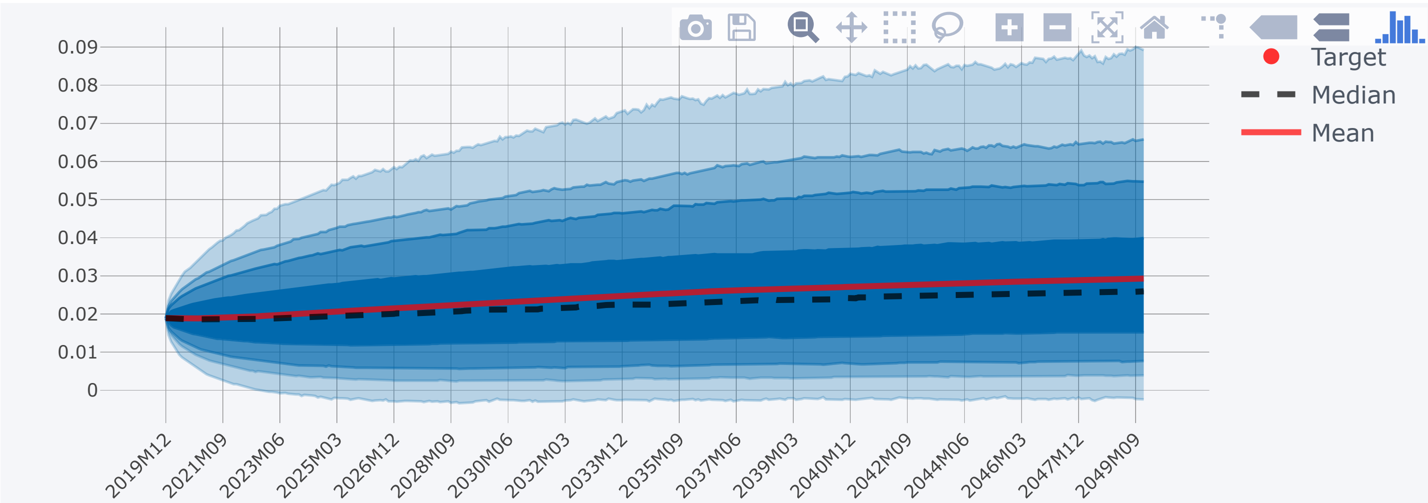
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0184	0.0224	0.0263	0.0287
std	0.0065	0.015	0.0182	0.0198
min	-0.0044	-0.0142	-0.0112	-0.0155
1%	0.0044	-0.004	-0.0035	-0.0038
5%	0.0081	0.0014	0.0023	0.0028
10%	0.0102	0.0047	0.006	0.0067
25%	0.0139	0.0116	0.0133	0.0144
50%	0.0182	0.0207	0.0229	0.0255
75%	0.0228	0.0313	0.0363	0.0395
90%	0.0269	0.0423	0.0508	0.0544
95%	0.0294	0.0499	0.0608	0.0658
99%	0.0344	0.0653	0.0812	0.0896
max	0.0477	0.1208	0.1404	0.1611

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

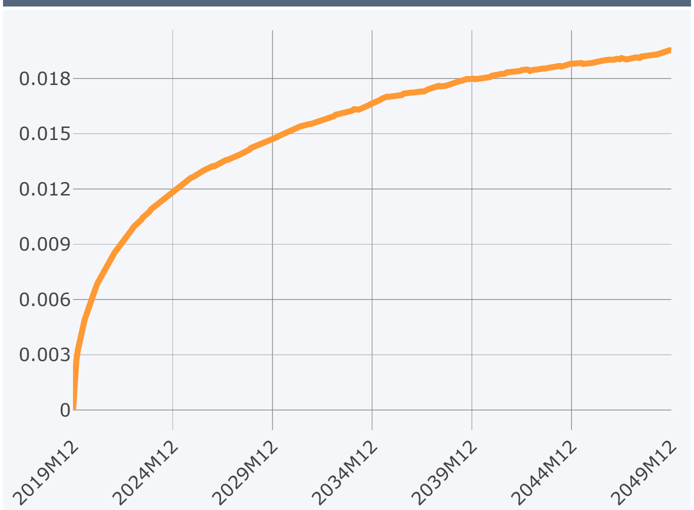
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

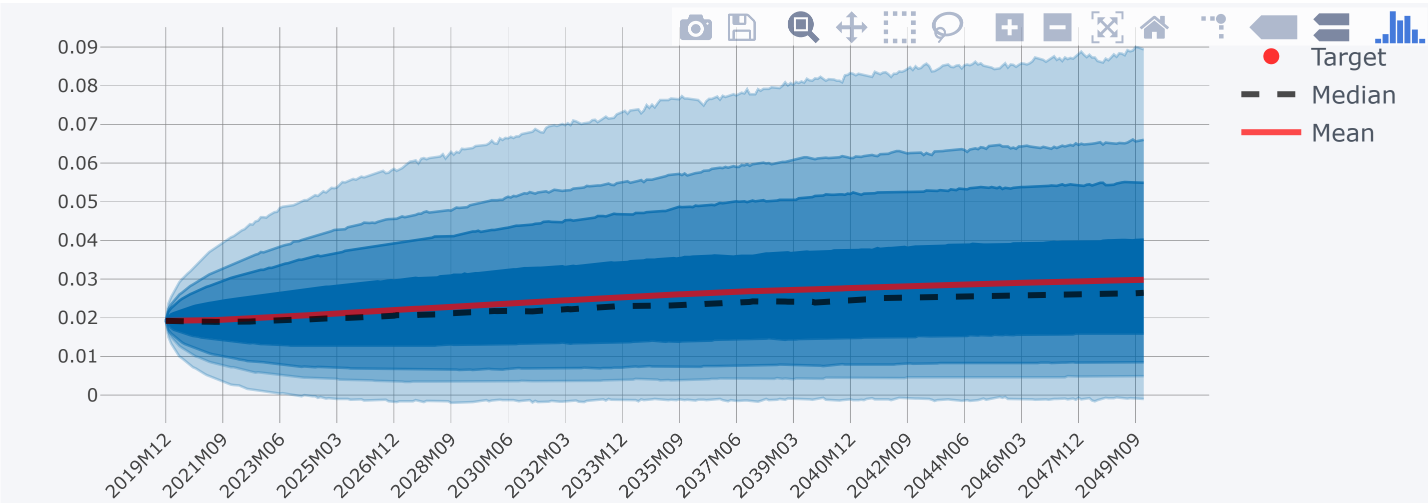
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0189	0.023	0.0269	0.0293
std	0.0063	0.0147	0.018	0.0195
min	-0.0029	-0.0121	-0.0092	-0.0134
1%	0.0054	-0.0026	-0.0023	-0.0024
5%	0.009	0.0024	0.0033	0.0039
10%	0.011	0.0058	0.0069	0.0077
25%	0.0145	0.0124	0.014	0.0152
50%	0.0186	0.0212	0.0235	0.0259
75%	0.023	0.0316	0.0367	0.0399
90%	0.027	0.0424	0.0512	0.0547
95%	0.0294	0.0501	0.0611	0.0658
99%	0.0343	0.0655	0.0817	0.0892
max	0.0466	0.1214	0.1408	0.1606

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

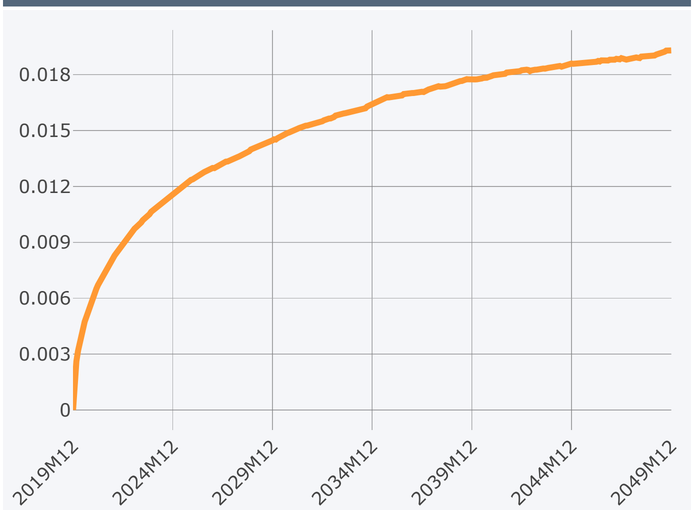
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

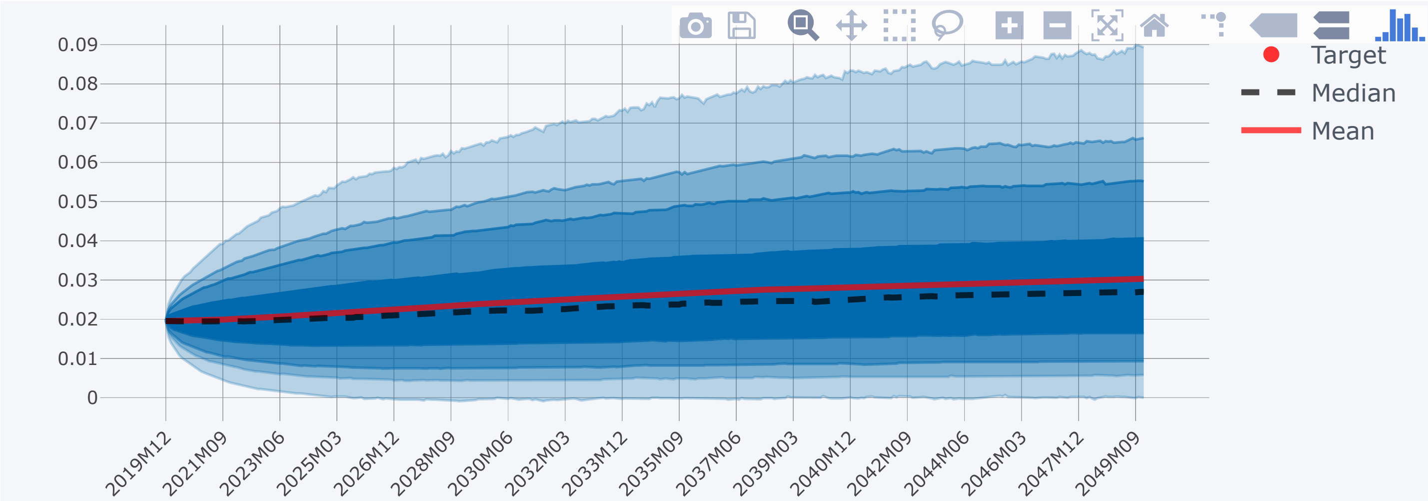
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0193	0.0236	0.0274	0.0298
std	0.0061	0.0145	0.0178	0.0193
min	-0.0016	-0.0102	-0.0076	-0.0114
1%	0.0063	-0.0014	-0.0011	-0.001
5%	0.0098	0.0035	0.0042	0.0049
10%	0.0117	0.0067	0.0077	0.0085
25%	0.0151	0.0131	0.0147	0.0159
50%	0.019	0.0218	0.024	0.0264
75%	0.0233	0.0321	0.0371	0.0402
90%	0.0271	0.0427	0.0515	0.0549
95%	0.0295	0.0504	0.0612	0.066
99%	0.0342	0.0658	0.0818	0.0894
max	0.0456	0.1219	0.141	0.1601

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

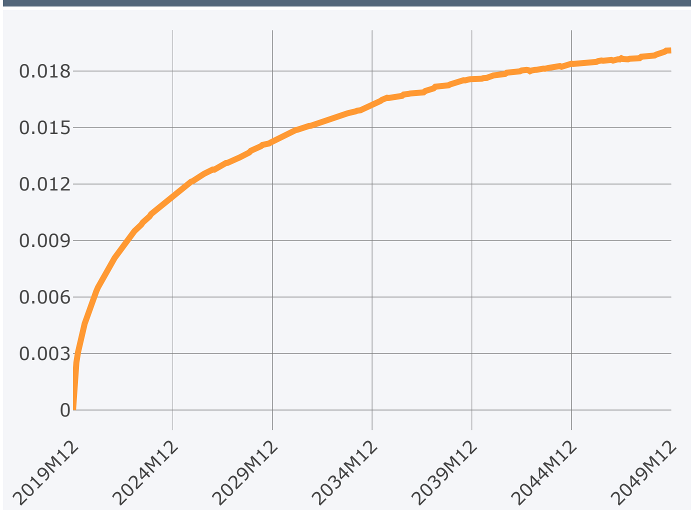
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

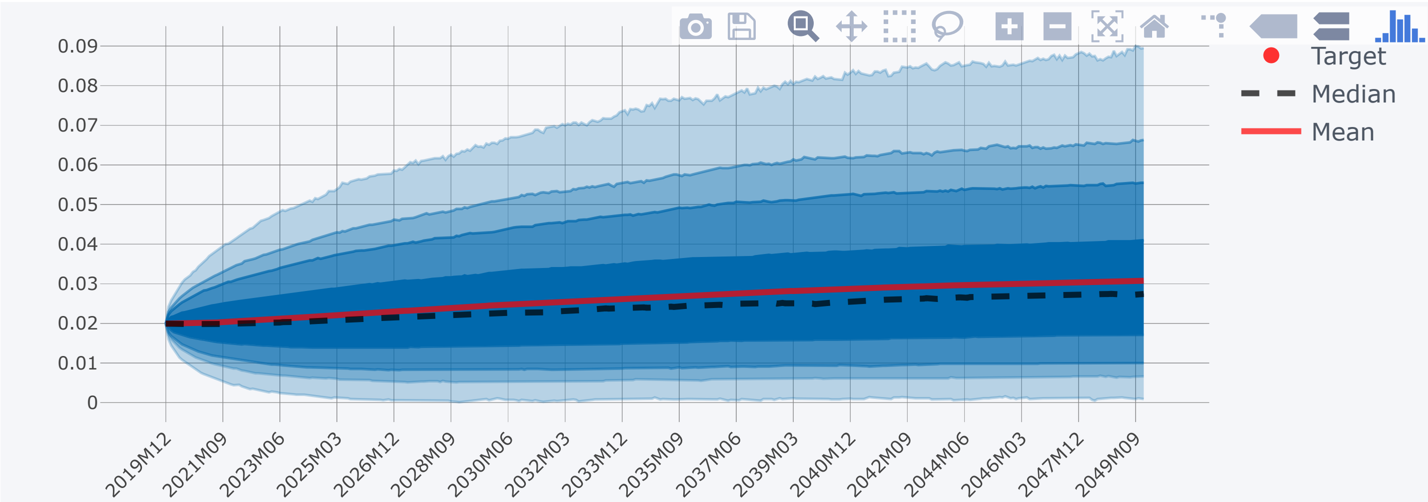
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0197	0.0241	0.0279	0.0303
std	0.0059	0.0143	0.0176	0.0191
min	-0.0004	-0.0085	-0.0061	-0.0097
1%	0.0072	-0.0002	0	0
5%	0.0105	0.0044	0.0052	0.0058
10%	0.0123	0.0075	0.0085	0.0093
25%	0.0156	0.0138	0.0152	0.0165
50%	0.0194	0.0222	0.0245	0.027
75%	0.0235	0.0324	0.0375	0.0406
90%	0.0273	0.0429	0.0516	0.0552
95%	0.0297	0.0507	0.0615	0.0662
99%	0.0343	0.0656	0.0817	0.0893
max	0.0449	0.1222	0.1411	0.1596

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

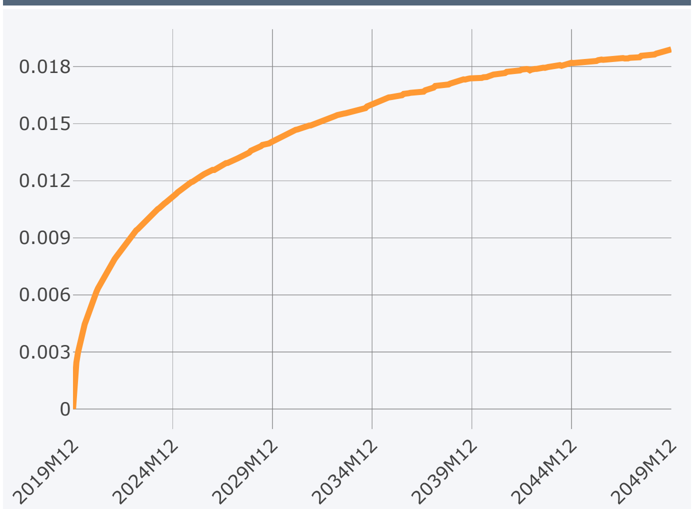
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

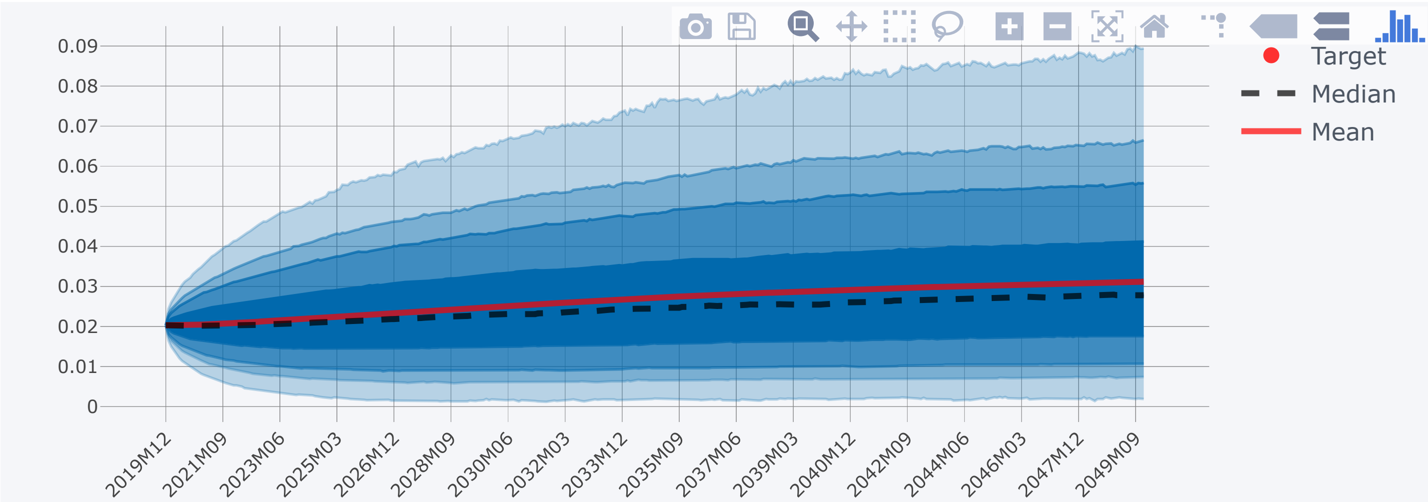
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0201	0.0245	0.0284	0.0308
std	0.0057	0.0141	0.0174	0.0189
min	0.0007	-0.0069	-0.0047	-0.0081
1%	0.008	0.0008	0.001	0.0009
5%	0.0111	0.0052	0.006	0.0066
10%	0.0129	0.0083	0.0092	0.01
25%	0.0161	0.0144	0.0158	0.0171
50%	0.0198	0.0226	0.025	0.0274
75%	0.0238	0.0327	0.0378	0.041
90%	0.0275	0.043	0.0518	0.0555
95%	0.0298	0.0508	0.0619	0.0663
99%	0.0343	0.0656	0.0817	0.0895
max	0.0442	0.1224	0.1411	0.159

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

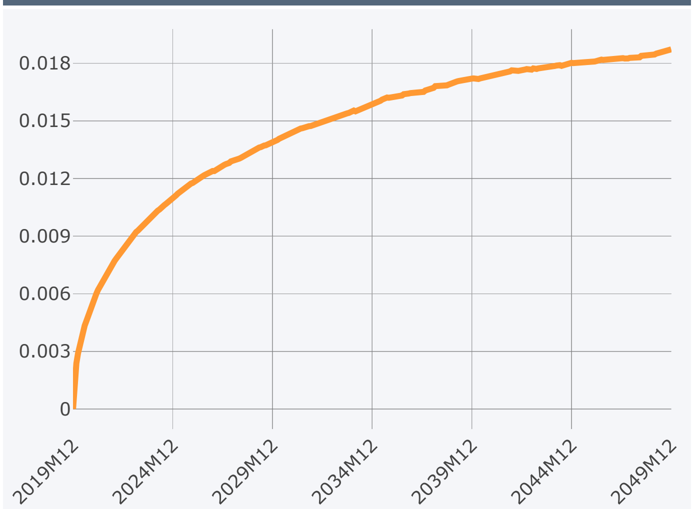
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0204	0.025	0.0288	0.0312
std	0.0056	0.0139	0.0172	0.0187
min	0.0018	-0.0055	-0.0035	-0.0066
1%	0.0087	0.0018	0.0019	0.0019
5%	0.0117	0.006	0.0068	0.0074
10%	0.0134	0.009	0.0099	0.0107
25%	0.0166	0.0149	0.0164	0.0176
50%	0.0201	0.023	0.0254	0.0278
75%	0.0241	0.033	0.0381	0.0412
90%	0.0277	0.0432	0.052	0.0558
95%	0.03	0.051	0.062	0.0665
99%	0.0343	0.0656	0.0816	0.0894
max	0.0441	0.1225	0.1411	0.1583

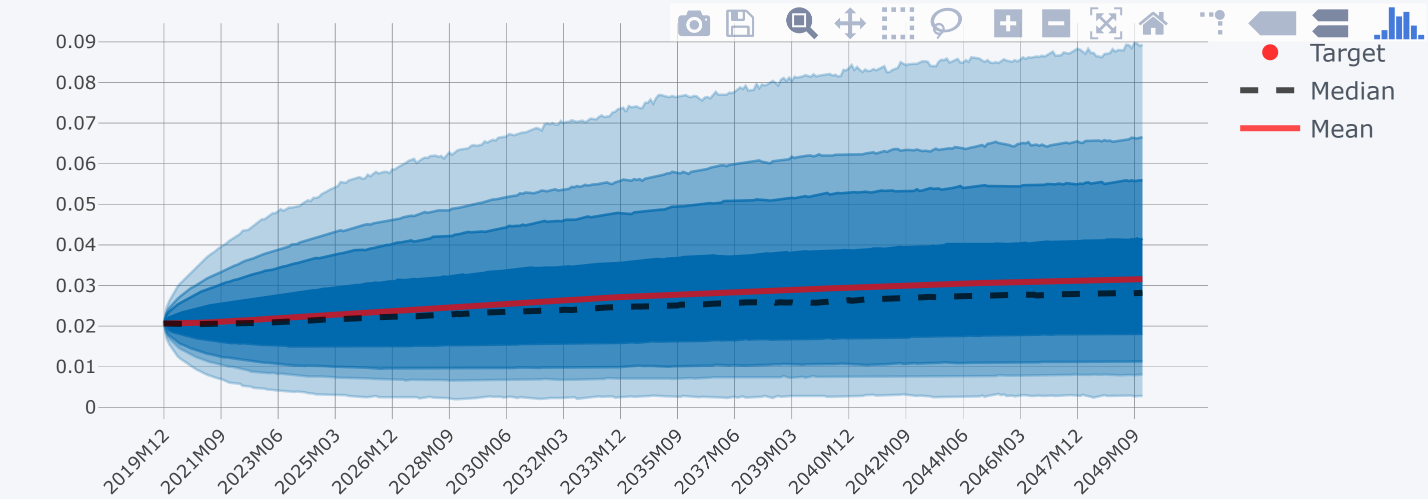
Cross Sectional Volatility Over Time



US Treasury 14 Year Yield - Spot
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

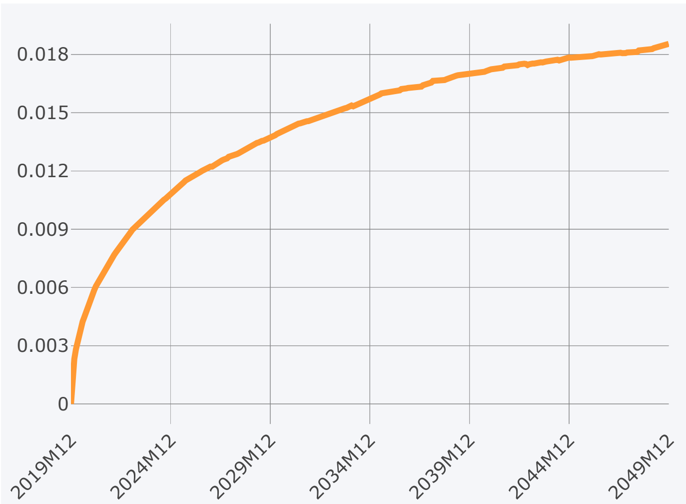
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0208	0.0254	0.0292	0.0316
std	0.0055	0.0137	0.017	0.0185
min	0.0027	-0.0042	-0.0024	-0.0053
1%	0.0093	0.0027	0.0028	0.0028
5%	0.0123	0.0067	0.0075	0.0081
10%	0.014	0.0097	0.0105	0.0113
25%	0.017	0.0155	0.0169	0.0181
50%	0.0205	0.0234	0.0258	0.0282
75%	0.0243	0.0333	0.0384	0.0415
90%	0.0279	0.0434	0.0522	0.0559
95%	0.0302	0.0512	0.062	0.0665
99%	0.0344	0.0656	0.0815	0.0893
max	0.0442	0.1225	0.1409	0.1577

Cross Sectional Volatility Over Time



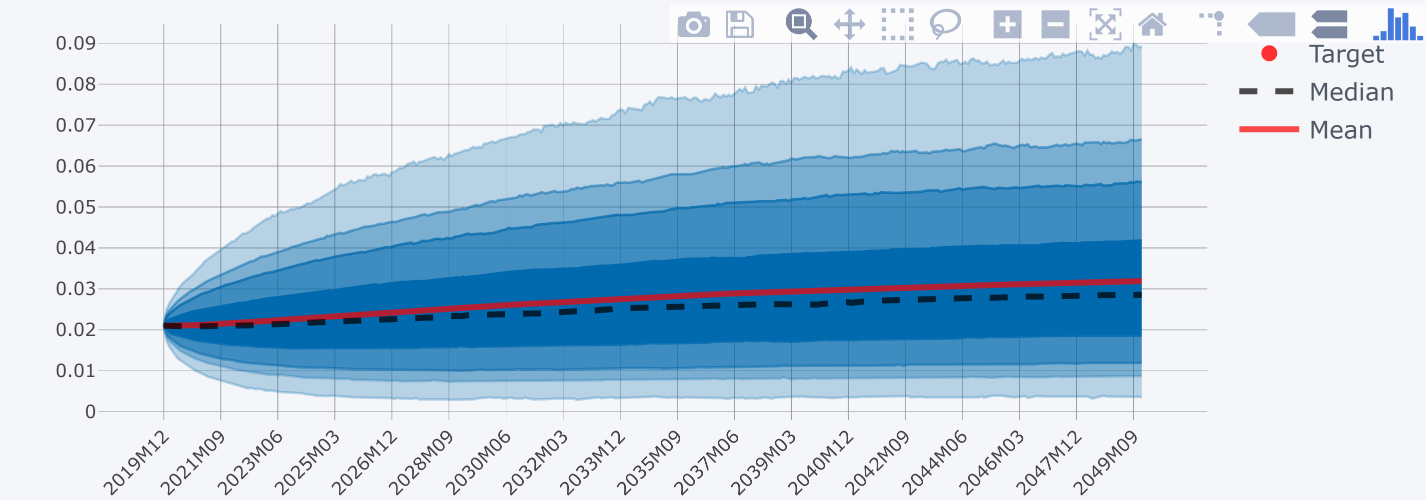
US Treasury 15 Year Yield - Spot

Conning | Risk Solutions

2019 Q4

Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

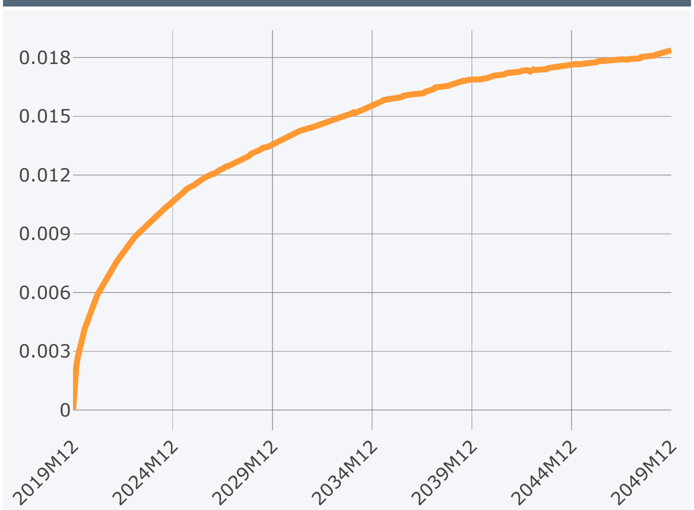
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0211	0.0258	0.0296	0.0319
std	0.0053	0.0136	0.0169	0.0184
min	0.0036	-0.003	-0.0015	-0.004
1%	0.0099	0.0035	0.0036	0.0036
5%	0.0128	0.0074	0.0082	0.0087
10%	0.0145	0.0103	0.0111	0.0119
25%	0.0174	0.0159	0.0174	0.0186
50%	0.0208	0.0238	0.0261	0.0286
75%	0.0246	0.0336	0.0387	0.0418
90%	0.0281	0.0436	0.0523	0.0561
95%	0.0303	0.0513	0.0622	0.0665
99%	0.0345	0.0656	0.0815	0.0892
max	0.0444	0.1225	0.1406	0.1569

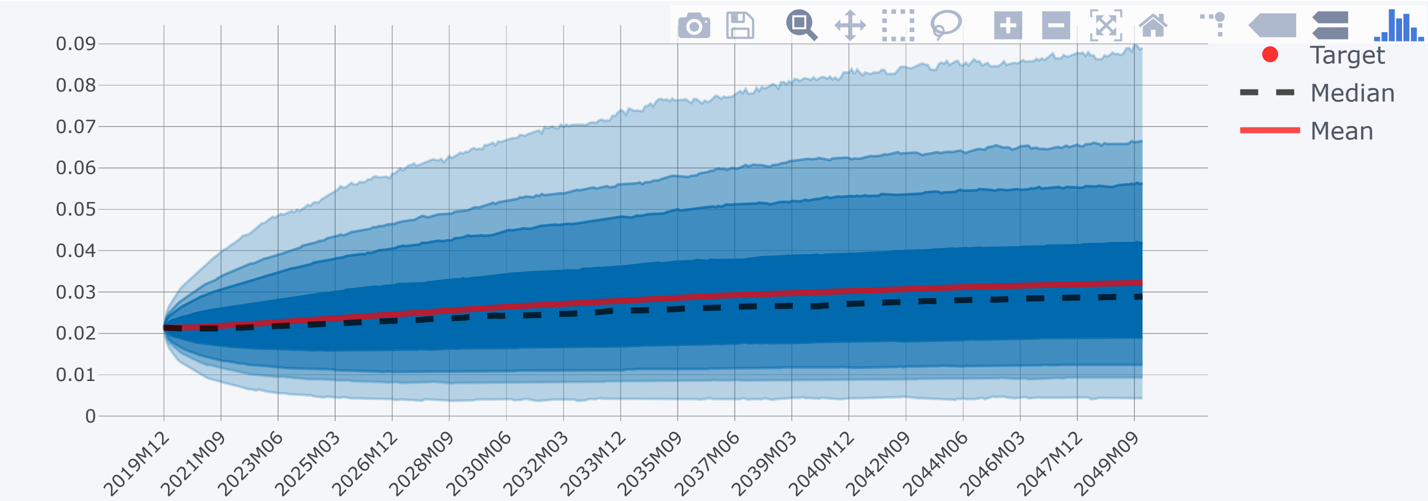
Cross Sectional Volatility Over Time



US Treasury 16 Year Yield - Spot
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

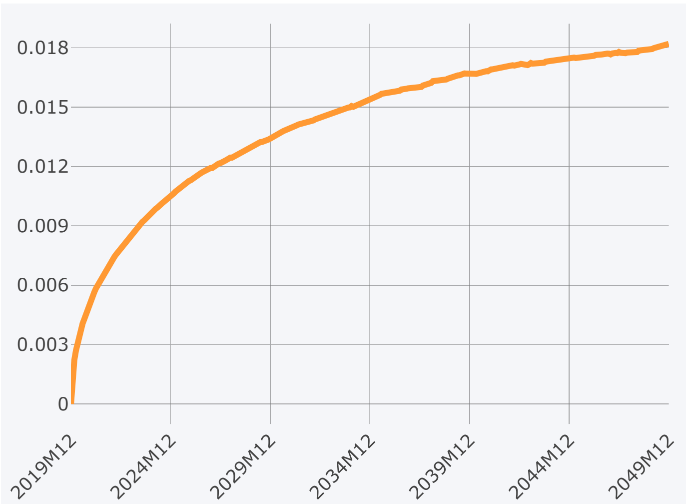
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0215	0.0262	0.0299	0.0322
std	0.0052	0.0134	0.0167	0.0182
min	0.0044	-0.0019	-0.0007	-0.0029
1%	0.0105	0.0041	0.0044	0.0043
5%	0.0134	0.008	0.0088	0.0093
10%	0.0149	0.0108	0.0117	0.0124
25%	0.0178	0.0164	0.0179	0.019
50%	0.0212	0.0242	0.0265	0.0289
75%	0.0249	0.0339	0.039	0.042
90%	0.0283	0.0437	0.0525	0.0563
95%	0.0305	0.0513	0.0622	0.0665
99%	0.0345	0.0657	0.0813	0.089
max	0.0446	0.1223	0.1403	0.1562

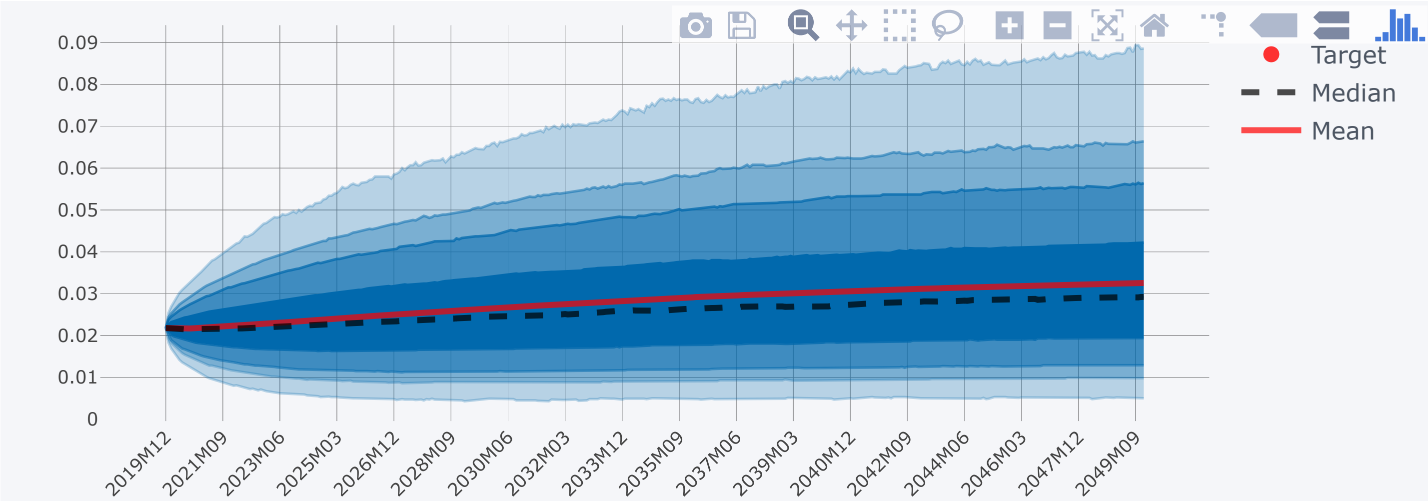
Cross Sectional Volatility Over Time



US Treasury 17 Year Yield - Spot
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

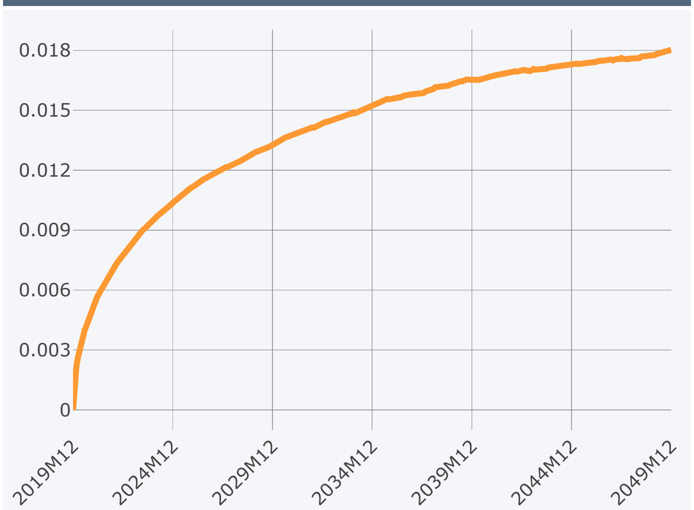
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0218	0.0265	0.0303	0.0326
std	0.0051	0.0133	0.0165	0.018
min	0.0052	-0.0009	0.0001	-0.0018
1%	0.011	0.0049	0.005	0.005
5%	0.0138	0.0087	0.0094	0.0098
10%	0.0154	0.0114	0.0122	0.0129
25%	0.0182	0.0168	0.0183	0.0194
50%	0.0215	0.0245	0.0268	0.0292
75%	0.0252	0.0341	0.0392	0.0422
90%	0.0285	0.0438	0.0526	0.0564
95%	0.0307	0.0514	0.0623	0.0664
99%	0.0346	0.0659	0.0813	0.0886
max	0.0447	0.1221	0.1398	0.1554

Cross Sectional Volatility Over Time



US Treasury 18 Year Yield - Spot

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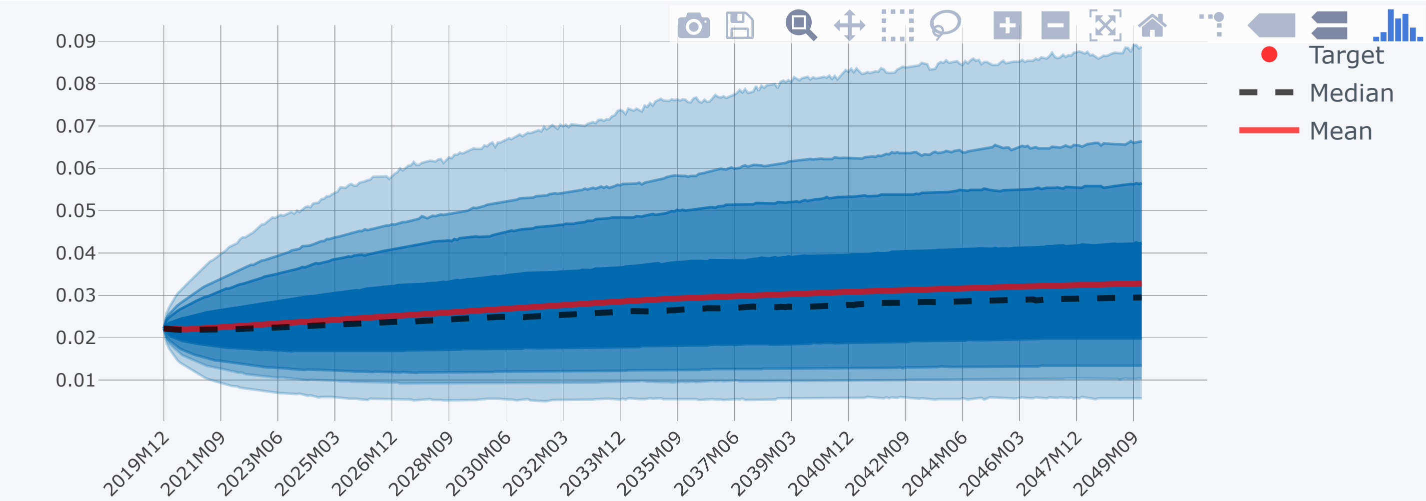
2019 Q4

Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

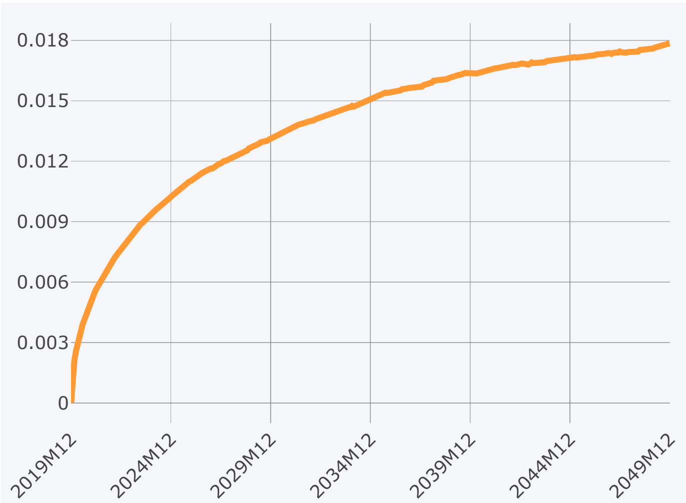
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0221	0.0268	0.0306	0.0328
std	0.0051	0.0131	0.0164	0.0179
min	0.006	0.0001	0.0009	-0.0008
1%	0.0115	0.0055	0.0057	0.0057
5%	0.0143	0.0093	0.0099	0.0103
10%	0.0158	0.0119	0.0127	0.0134
25%	0.0186	0.0173	0.0187	0.0198
50%	0.0218	0.0248	0.0271	0.0295
75%	0.0254	0.0343	0.0395	0.0424
90%	0.0287	0.0439	0.0527	0.0565
95%	0.0309	0.0515	0.0622	0.0664
99%	0.0348	0.0658	0.0812	0.0887
max	0.0448	0.1218	0.1394	0.1545

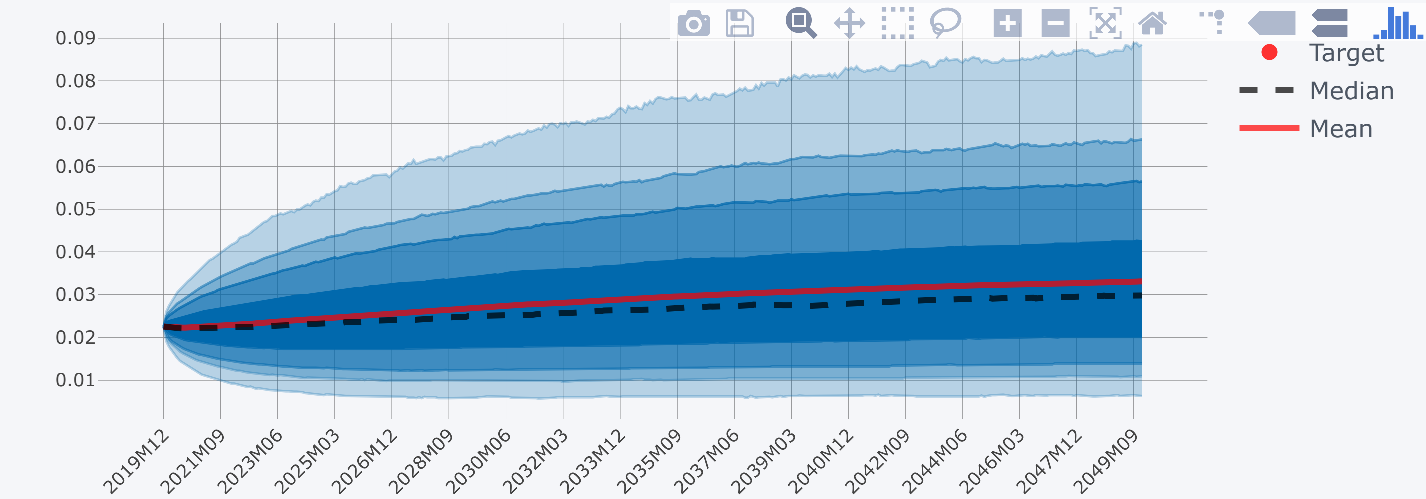
Cross Sectional Volatility Over Time



US Treasury 19 Year Yield - Spot
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

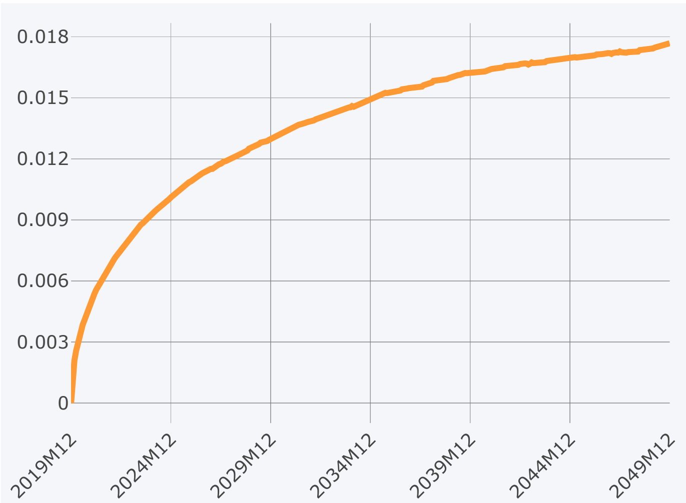
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0224	0.0271	0.0308	0.0331
std	0.005	0.013	0.0162	0.0177
min	0.0067	0.001	0.0016	0.0001
1%	0.012	0.0062	0.0064	0.0063
5%	0.0147	0.0098	0.0104	0.0109
10%	0.0162	0.0123	0.0132	0.0139
25%	0.0189	0.0176	0.0191	0.0201
50%	0.0221	0.0252	0.0274	0.0298
75%	0.0257	0.0346	0.0396	0.0425
90%	0.0289	0.0441	0.0528	0.0565
95%	0.0311	0.0516	0.0623	0.0663
99%	0.0349	0.0657	0.081	0.0885
max	0.0449	0.1214	0.1388	0.1536

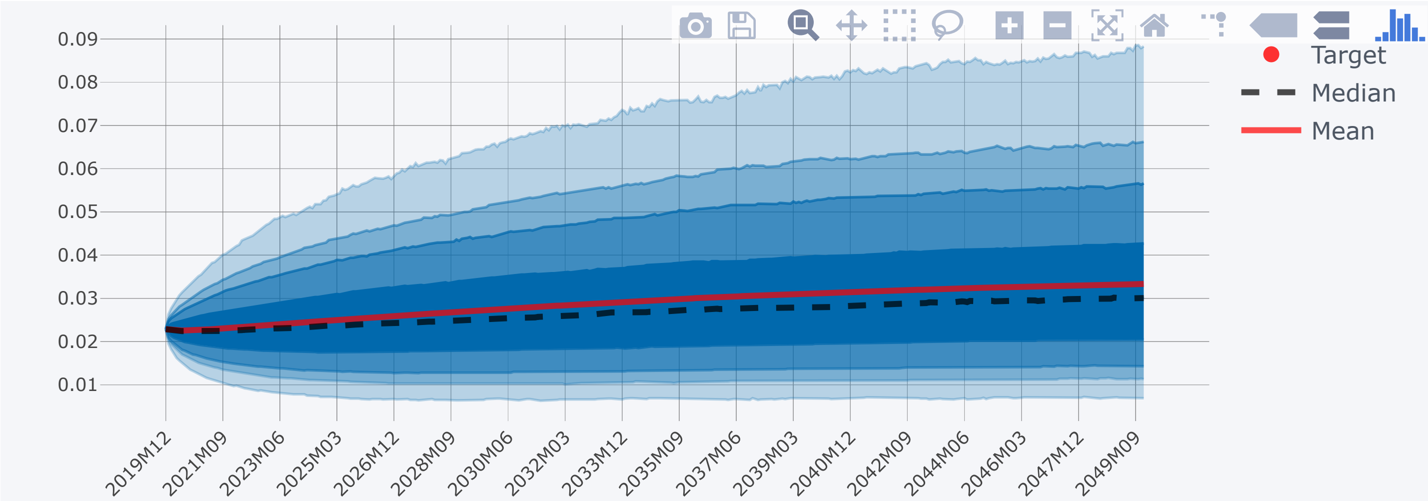
Cross Sectional Volatility Over Time



US Treasury 20 Year Yield - Spot
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

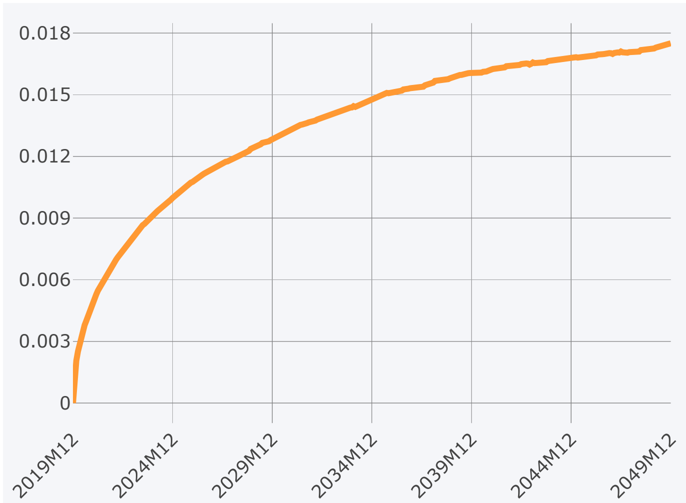
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

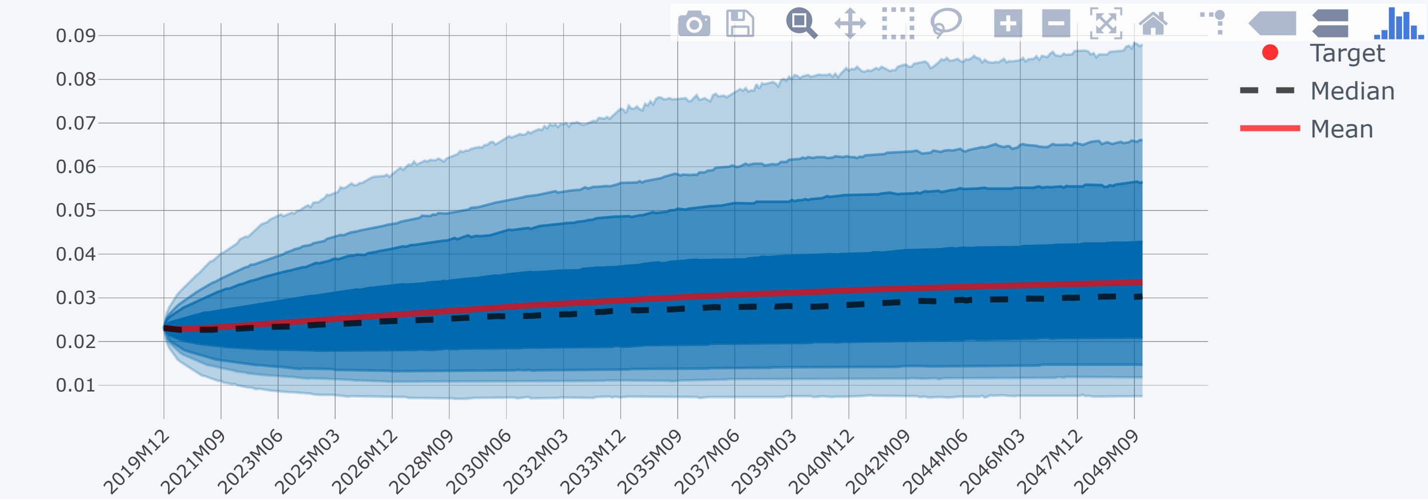
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0227	0.0274	0.0311	0.0333
std	0.0049	0.0128	0.0161	0.0175
min	0.0073	0.0019	0.0023	0.001
1%	0.0125	0.0067	0.0069	0.0069
5%	0.0151	0.0104	0.0109	0.0113
10%	0.0166	0.0128	0.0136	0.0143
25%	0.0193	0.018	0.0195	0.0205
50%	0.0224	0.0255	0.0277	0.0301
75%	0.0259	0.0348	0.0397	0.0427
90%	0.0291	0.0442	0.0528	0.0566
95%	0.0312	0.0517	0.0622	0.0662
99%	0.0351	0.0656	0.081	0.0883
max	0.045	0.121	0.1382	0.1527

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

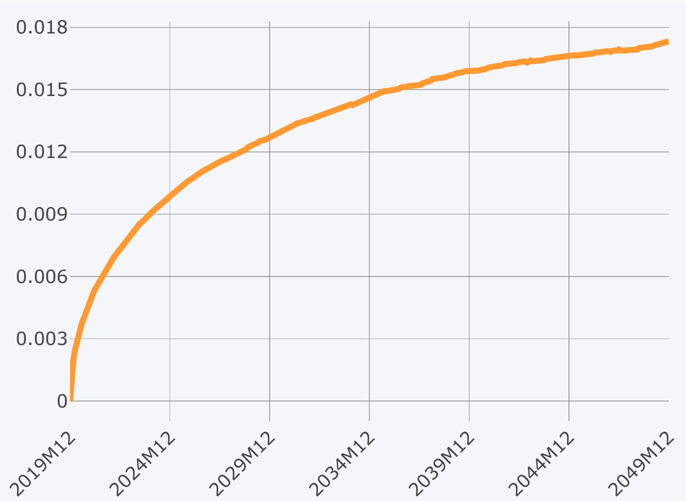
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

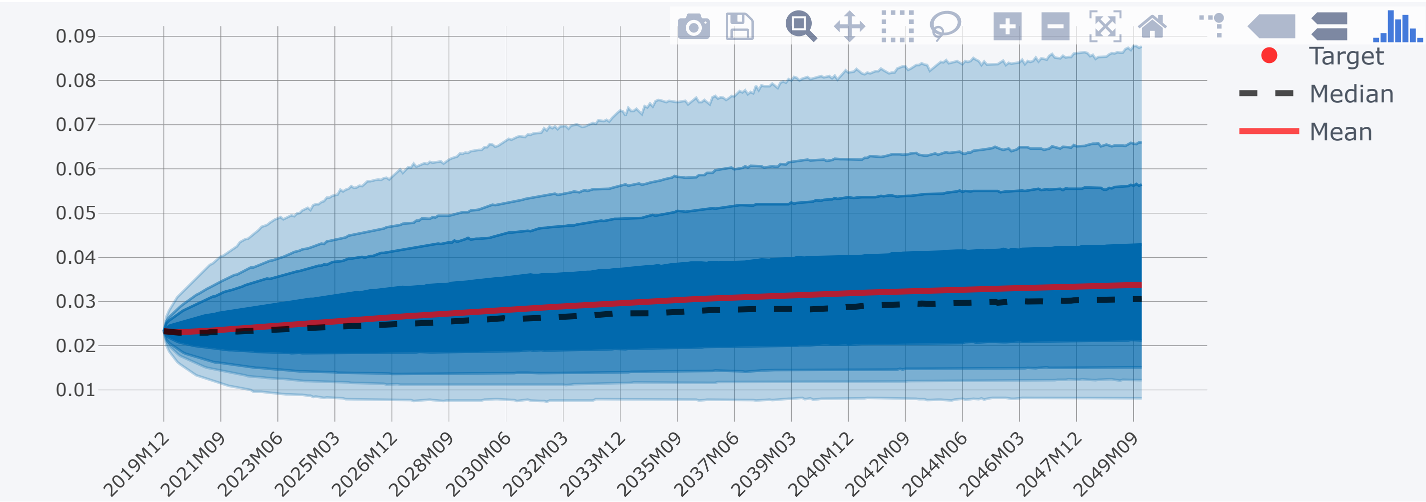
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.023	0.0277	0.0314	0.0336
std	0.0048	0.0127	0.0159	0.0173
min	0.0079	0.0027	0.0029	0.0018
1%	0.0129	0.0073	0.0075	0.0075
5%	0.0155	0.0108	0.0114	0.0118
10%	0.017	0.0132	0.0141	0.0147
25%	0.0196	0.0183	0.0198	0.0209
50%	0.0227	0.0257	0.028	0.0303
75%	0.0261	0.0349	0.0399	0.0428
90%	0.0293	0.0443	0.0528	0.0565
95%	0.0313	0.0517	0.0622	0.0661
99%	0.0352	0.0656	0.0808	0.088
max	0.0451	0.1205	0.1375	0.1518

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

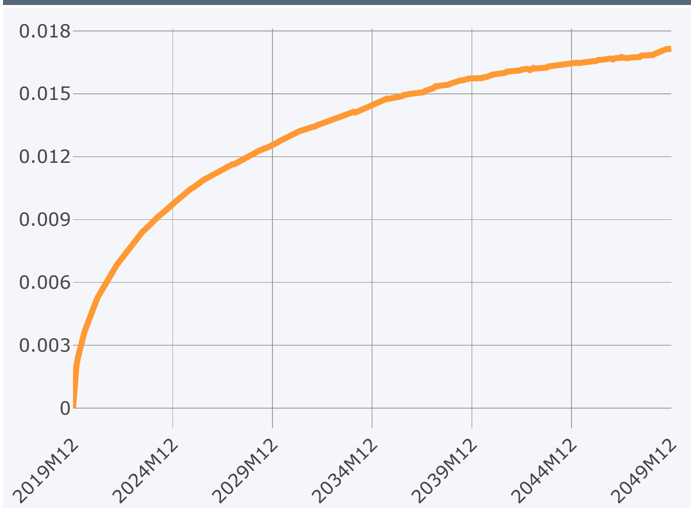
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0232	0.028	0.0316	0.0338
std	0.0048	0.0126	0.0157	0.0172
min	0.0085	0.0034	0.0036	0.0026
1%	0.0133	0.0078	0.008	0.0081
5%	0.0159	0.0113	0.0119	0.0122
10%	0.0173	0.0136	0.0145	0.0151
25%	0.0199	0.0187	0.0202	0.0212
50%	0.023	0.026	0.0282	0.0306
75%	0.0263	0.0351	0.04	0.0429
90%	0.0295	0.0444	0.0529	0.0565
95%	0.0315	0.0518	0.0621	0.066
99%	0.0352	0.0656	0.0807	0.0877
max	0.0451	0.12	0.1368	0.1508

Cross Sectional Volatility Over Time



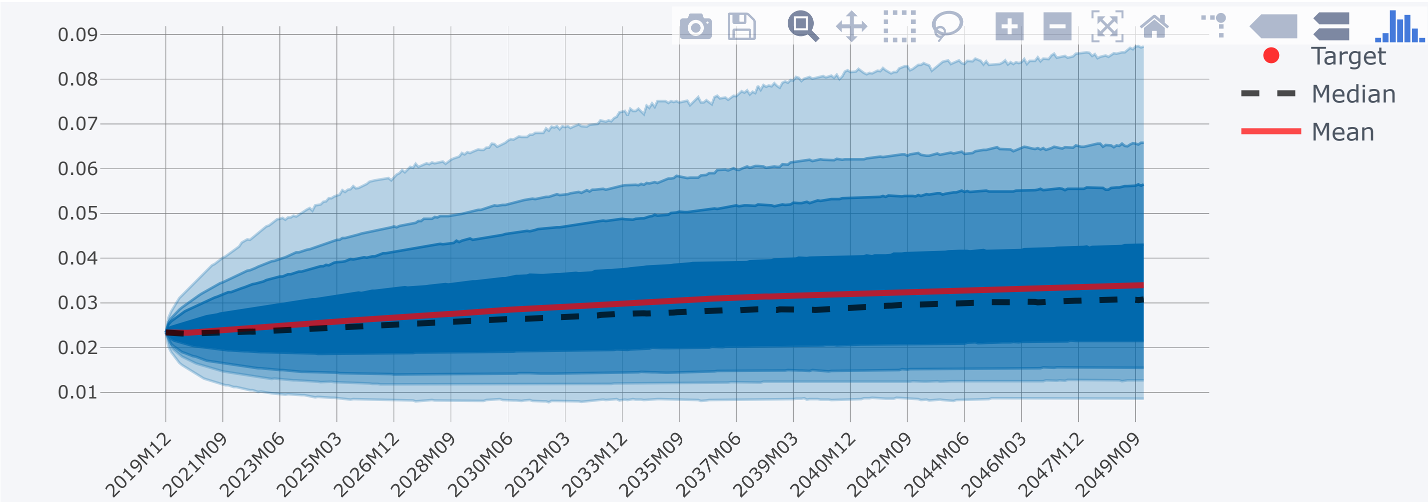
US Treasury 23 Year Yield - Spot

Conning | Risk Solutions

2019 Q4

Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

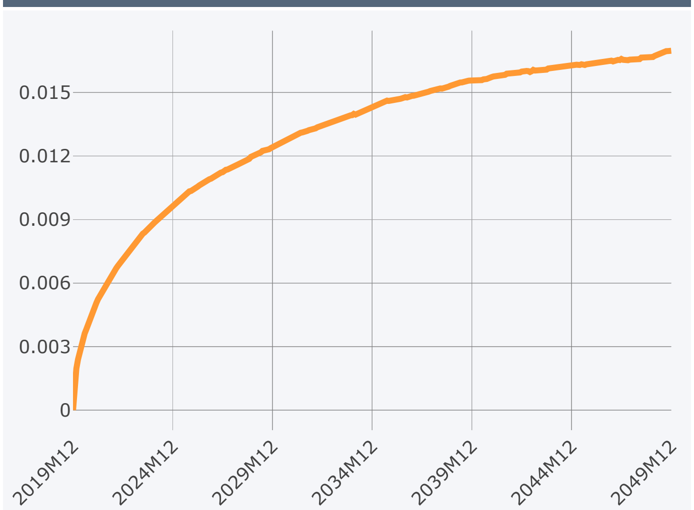
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

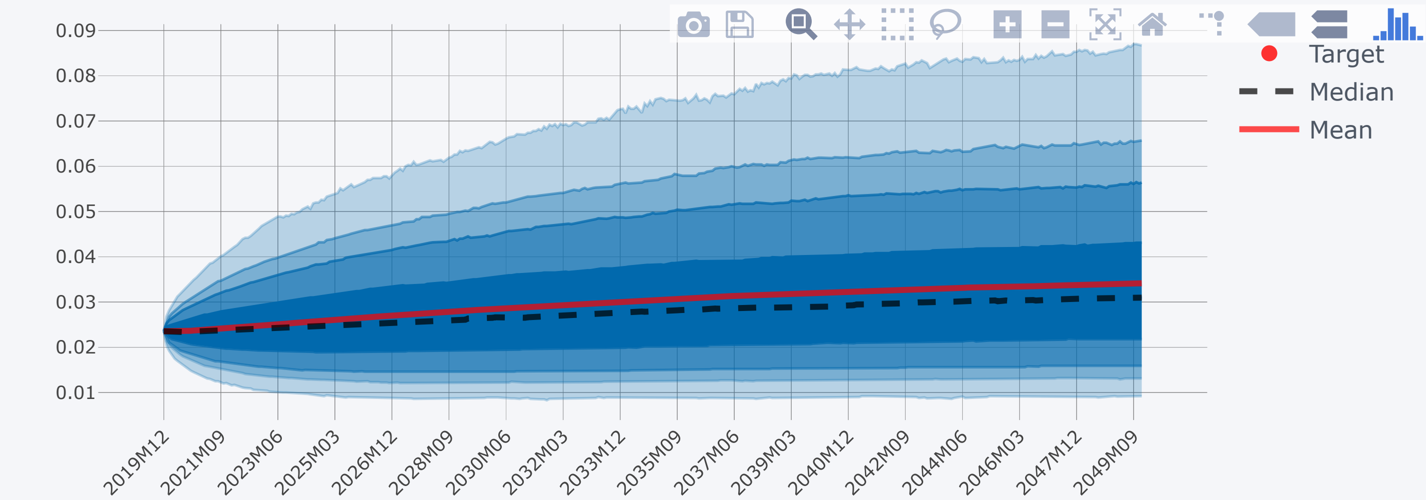
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0235	0.0282	0.0318	0.034
std	0.0047	0.0124	0.0156	0.017
min	0.0091	0.0041	0.0042	0.0033
1%	0.0138	0.0083	0.0085	0.0086
5%	0.0163	0.0118	0.0123	0.0127
10%	0.0177	0.014	0.0149	0.0155
25%	0.0202	0.019	0.0205	0.0215
50%	0.0232	0.0263	0.0285	0.0308
75%	0.0265	0.0352	0.0401	0.043
90%	0.0297	0.0445	0.0529	0.0565
95%	0.0316	0.0517	0.062	0.0658
99%	0.0353	0.0656	0.0805	0.0873
max	0.0452	0.1194	0.1361	0.1497

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

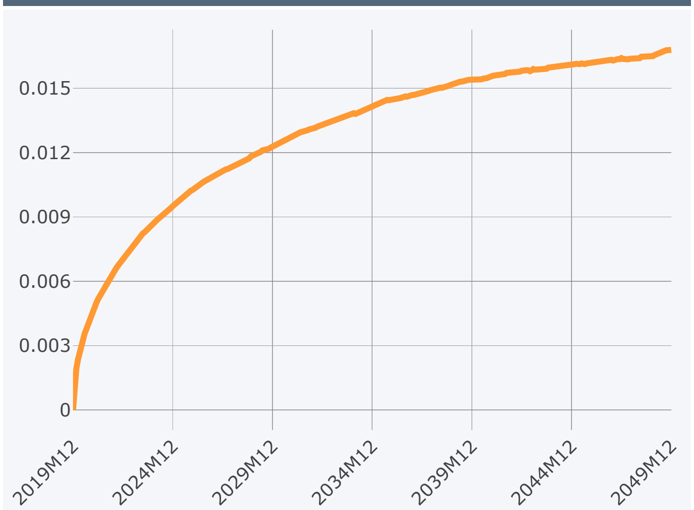
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

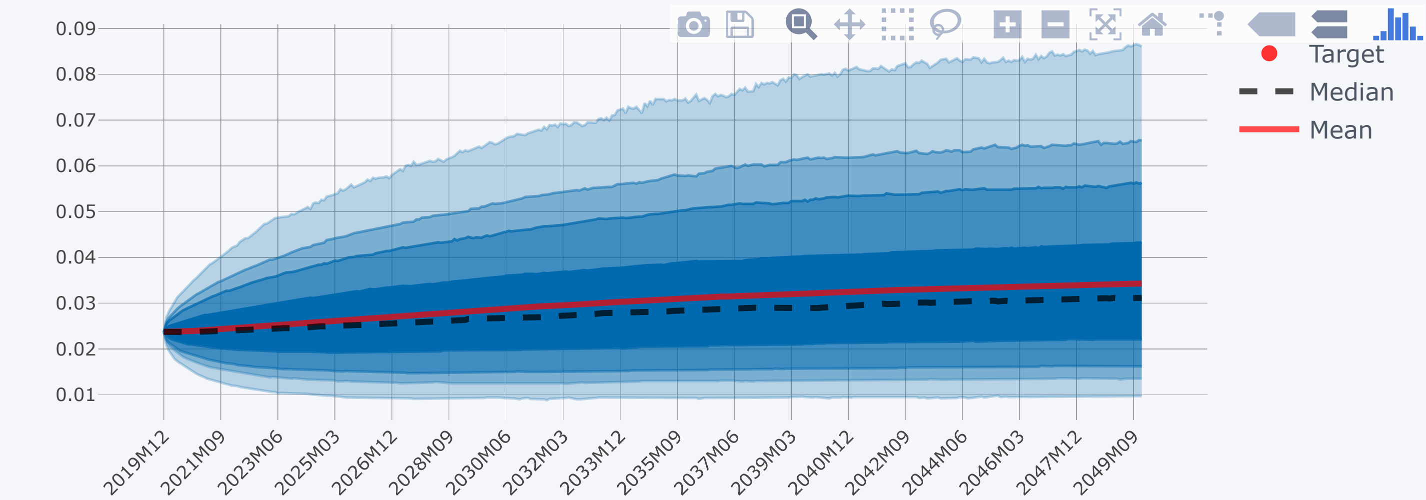
	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0237	0.0284	0.032	0.0341
std	0.0046	0.0123	0.0154	0.0168
min	0.0096	0.0048	0.0047	0.004
1%	0.0142	0.0088	0.009	0.0092
5%	0.0166	0.0122	0.0127	0.0131
10%	0.018	0.0144	0.0153	0.0159
25%	0.0205	0.0193	0.0209	0.0218
50%	0.0235	0.0265	0.0287	0.031
75%	0.0268	0.0354	0.0402	0.0431
90%	0.0298	0.0445	0.0529	0.0564
95%	0.0317	0.0517	0.0618	0.0657
99%	0.0354	0.0654	0.0803	0.0867
max	0.0452	0.1188	0.1353	0.1487

Cross Sectional Volatility Over Time



US Treasury 25 Year Yield - Spot 2019 Q4
Conning | Risk Solutions Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

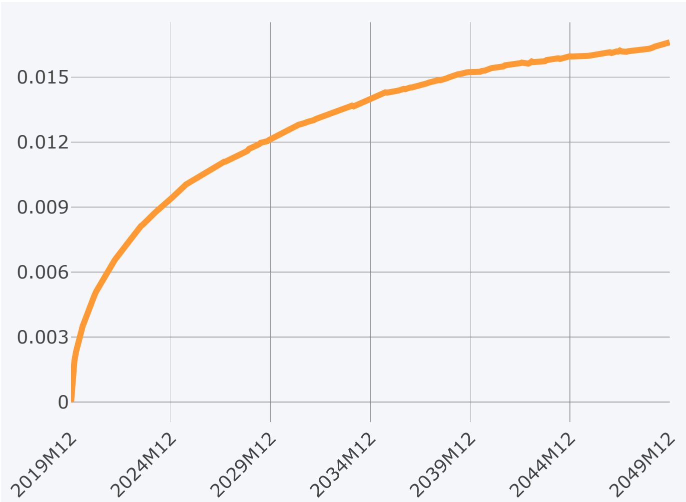
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.024	0.0286	0.0322	0.0343
std	0.0046	0.0121	0.0152	0.0166
min	0.0101	0.0054	0.0053	0.0047
1%	0.0146	0.0093	0.0095	0.0097
5%	0.017	0.0127	0.0131	0.0135
10%	0.0184	0.0148	0.0156	0.0162
25%	0.0207	0.0197	0.0212	0.0221
50%	0.0237	0.0267	0.0289	0.0312
75%	0.0269	0.0355	0.0403	0.0432
90%	0.03	0.0446	0.0529	0.0563
95%	0.0319	0.0517	0.0617	0.0656
99%	0.0355	0.0652	0.08	0.0861
max	0.0452	0.1182	0.1345	0.1476

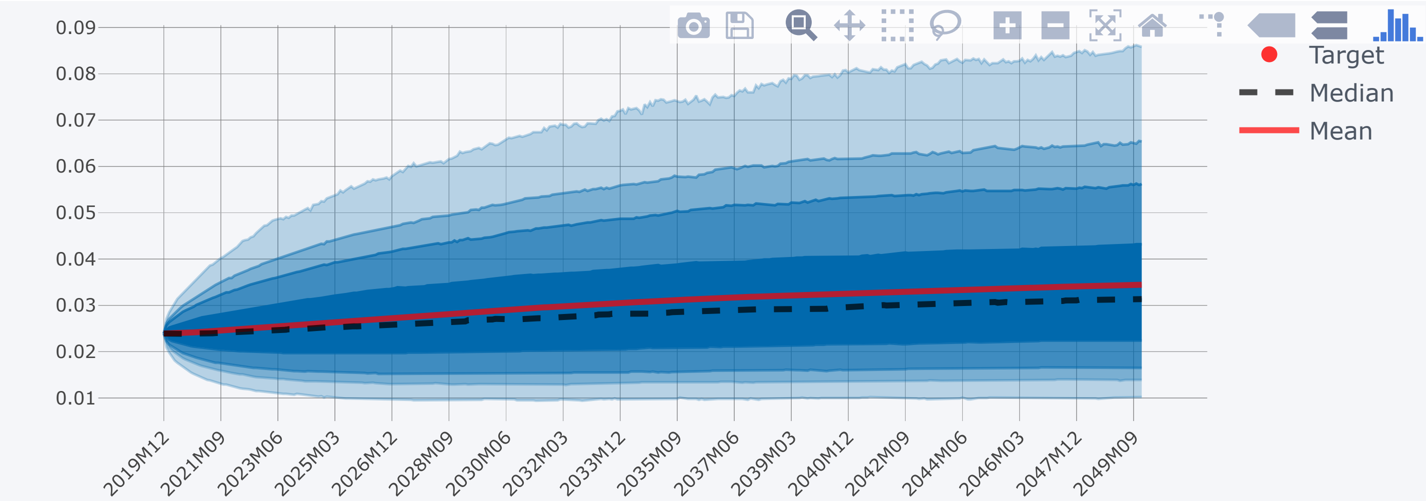
Cross Sectional Volatility Over Time



US Treasury 26 Year Yield - Spot
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

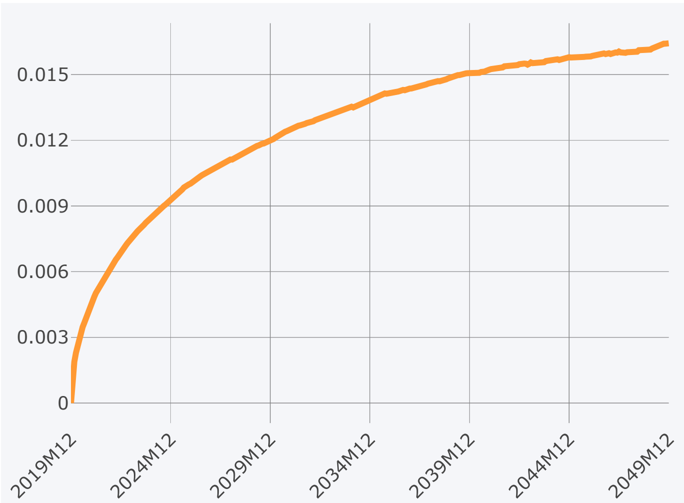
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

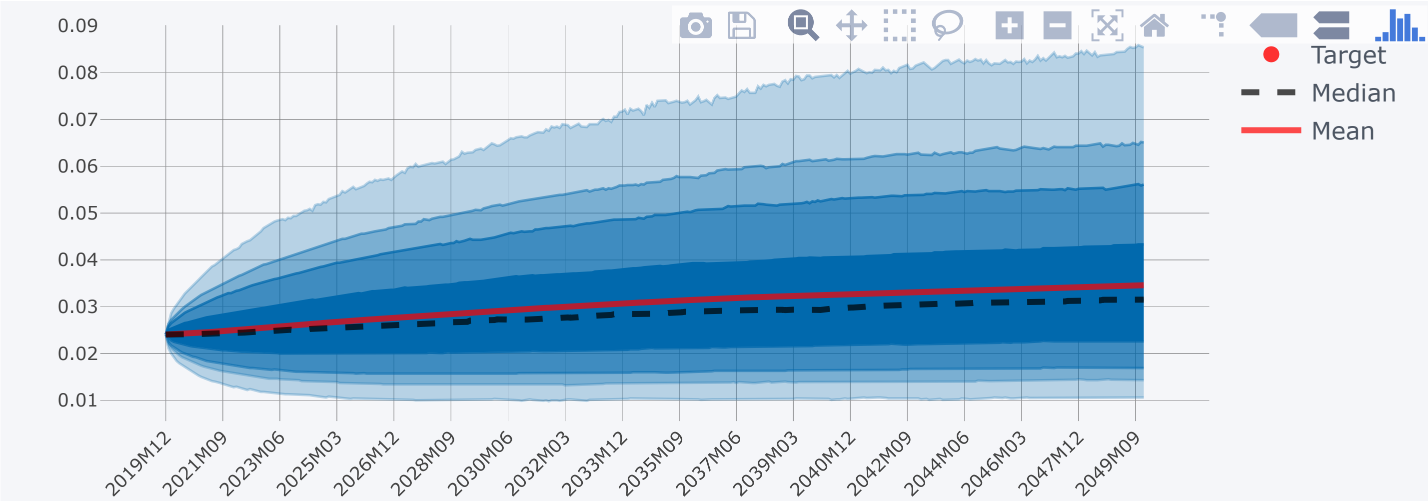
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0242	0.0288	0.0323	0.0344
std	0.0045	0.012	0.0151	0.0164
min	0.0106	0.006	0.0058	0.0053
1%	0.0149	0.0098	0.01	0.0102
5%	0.0173	0.0131	0.0135	0.0139
10%	0.0187	0.0152	0.016	0.0165
25%	0.021	0.02	0.0215	0.0224
50%	0.0239	0.027	0.0291	0.0313
75%	0.0271	0.0357	0.0404	0.0432
90%	0.0301	0.0447	0.0528	0.0562
95%	0.032	0.0516	0.0616	0.0654
99%	0.0356	0.065	0.0796	0.0858
max	0.0452	0.1175	0.1336	0.1465

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

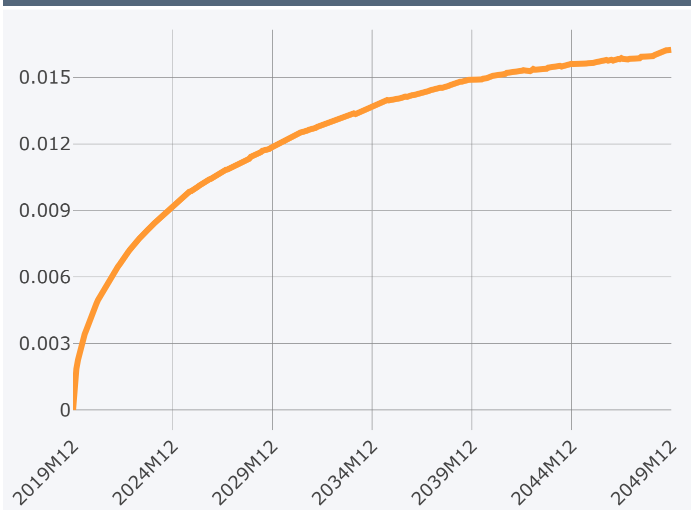
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

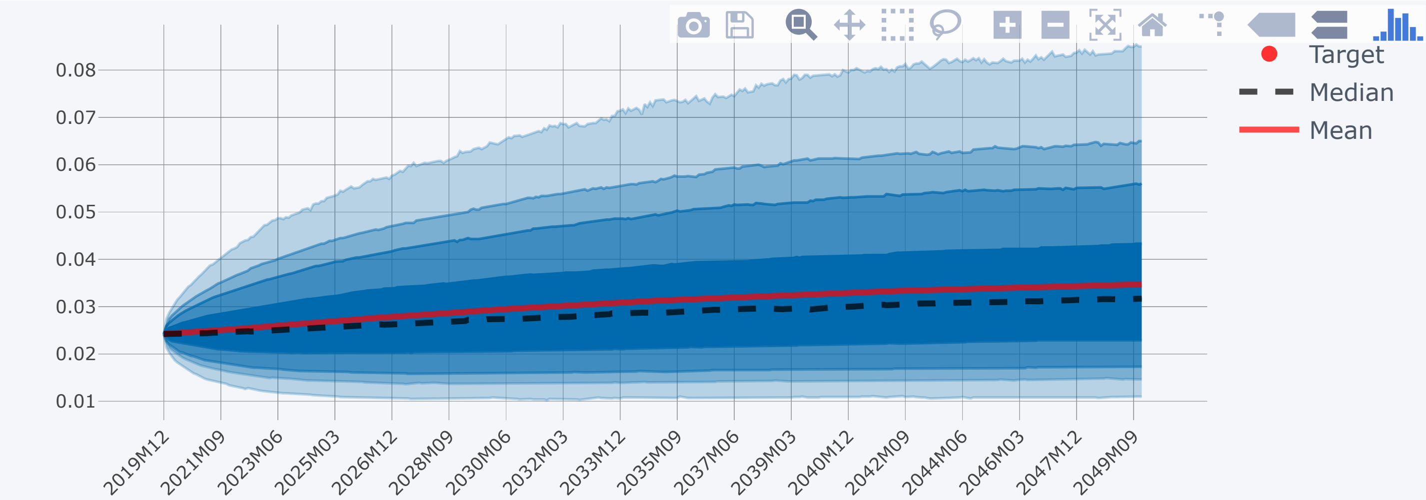
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0244	0.029	0.0325	0.0346
std	0.0044	0.0119	0.0149	0.0162
min	0.0111	0.0065	0.0064	0.0059
1%	0.0153	0.0102	0.0104	0.0106
5%	0.0176	0.0134	0.0139	0.0143
10%	0.0189	0.0156	0.0163	0.0169
25%	0.0213	0.0203	0.0217	0.0226
50%	0.0242	0.0272	0.0293	0.0315
75%	0.0273	0.0358	0.0405	0.0433
90%	0.0302	0.0447	0.0527	0.0561
95%	0.0321	0.0515	0.0614	0.0651
99%	0.0357	0.0649	0.0792	0.0854
max	0.0452	0.1168	0.1327	0.1454

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

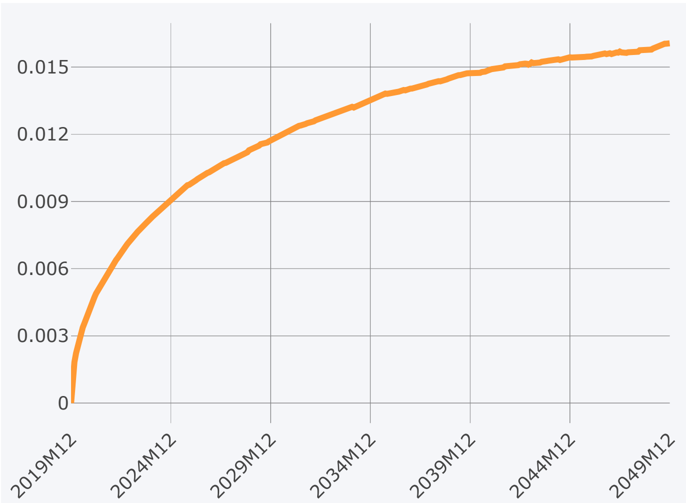
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

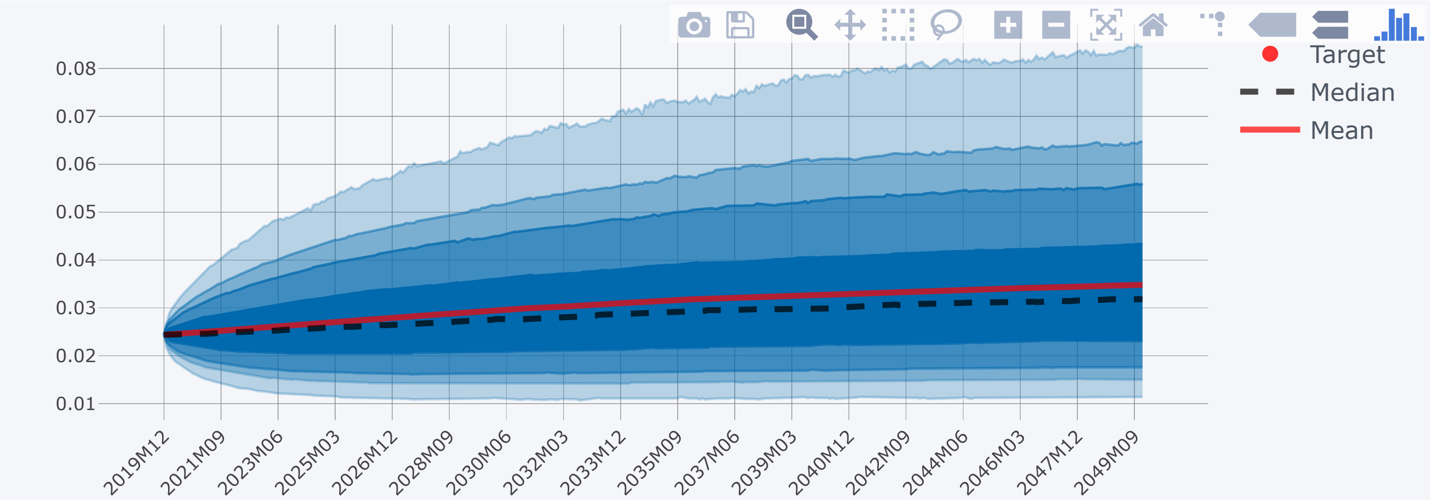
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0246	0.0292	0.0326	0.0347
std	0.0044	0.0117	0.0147	0.0161
min	0.0116	0.0071	0.0069	0.0065
1%	0.0157	0.0107	0.0108	0.011
5%	0.018	0.0138	0.0142	0.0146
10%	0.0192	0.0159	0.0167	0.0173
25%	0.0215	0.0206	0.022	0.0229
50%	0.0244	0.0274	0.0295	0.0317
75%	0.0275	0.0359	0.0406	0.0433
90%	0.0304	0.0447	0.0526	0.056
95%	0.0322	0.0515	0.0612	0.065
99%	0.0357	0.0647	0.0788	0.085
max	0.0452	0.1161	0.1318	0.1443

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

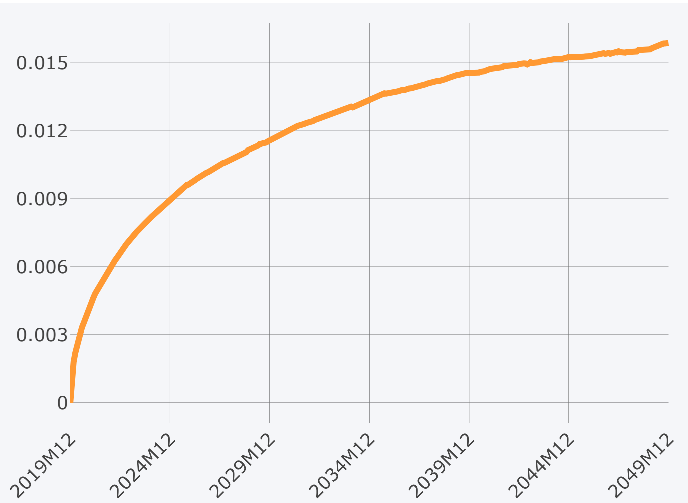
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

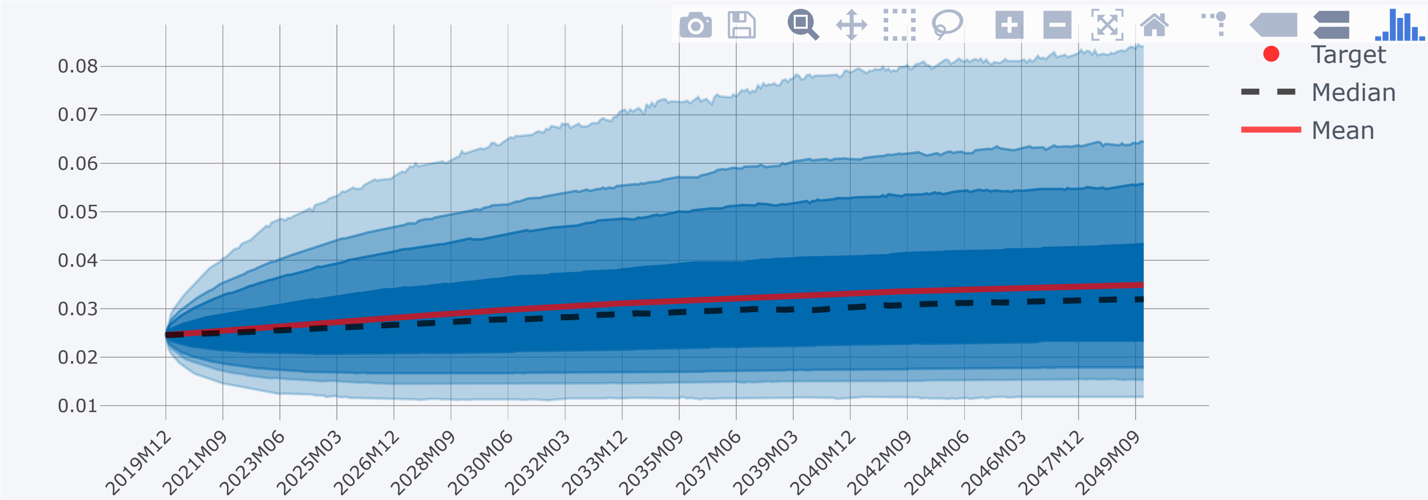
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0248	0.0294	0.0328	0.0348
std	0.0043	0.0116	0.0146	0.0159
min	0.0119	0.0076	0.0074	0.0071
1%	0.016	0.0111	0.0112	0.0114
5%	0.0183	0.0142	0.0146	0.015
10%	0.0195	0.0162	0.017	0.0176
25%	0.0218	0.0208	0.0223	0.0231
50%	0.0246	0.0276	0.0296	0.0318
75%	0.0276	0.036	0.0406	0.0433
90%	0.0305	0.0447	0.0526	0.0559
95%	0.0323	0.0514	0.061	0.0647
99%	0.0358	0.0645	0.0783	0.0846
max	0.0452	0.1153	0.1309	0.1431

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

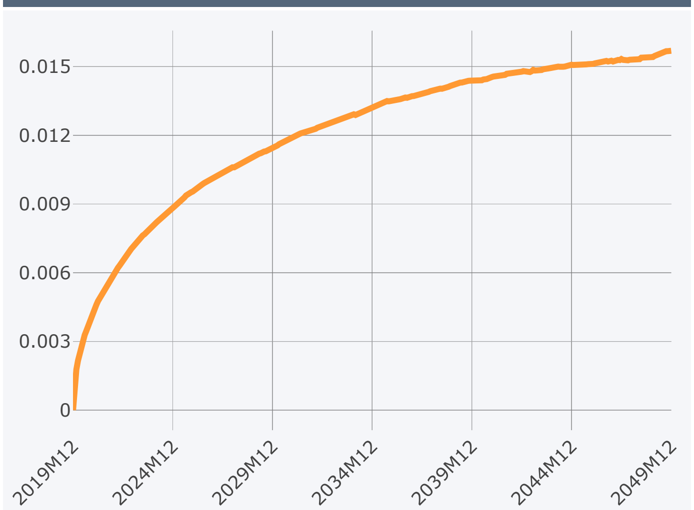
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

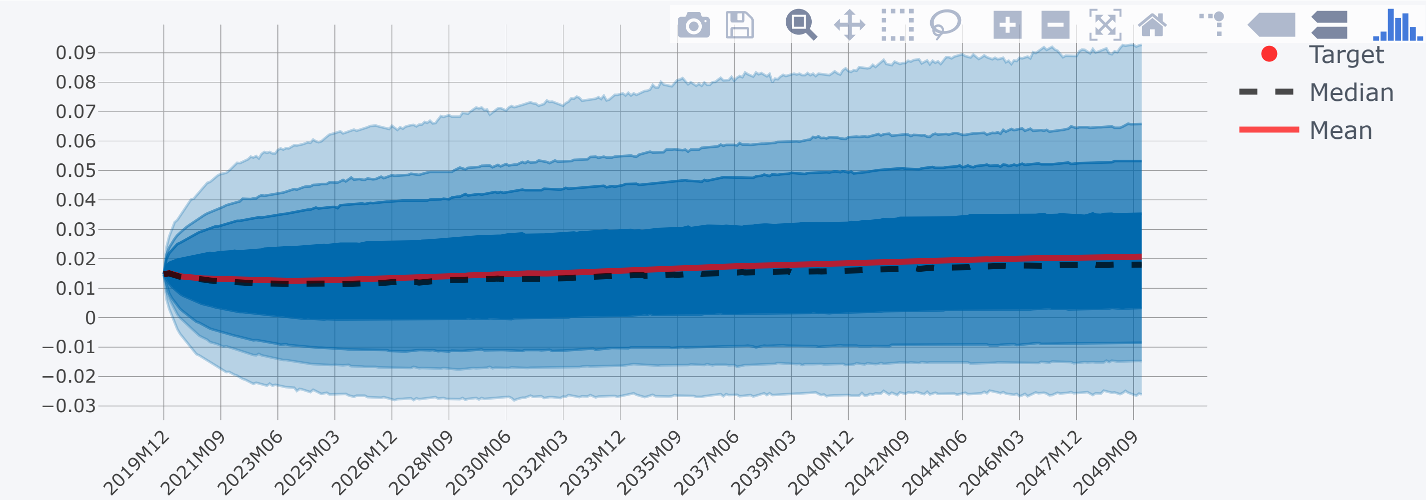
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.025	0.0296	0.0329	0.0349
std	0.0043	0.0114	0.0144	0.0157
min	0.0123	0.008	0.0078	0.0076
1%	0.0163	0.0116	0.0116	0.0118
5%	0.0185	0.0146	0.015	0.0153
10%	0.0198	0.0165	0.0173	0.0179
25%	0.022	0.0211	0.0225	0.0234
50%	0.0248	0.0278	0.0298	0.032
75%	0.0278	0.036	0.0406	0.0433
90%	0.0306	0.0447	0.0525	0.0558
95%	0.0324	0.0513	0.0608	0.0645
99%	0.0358	0.0642	0.078	0.0841
max	0.0451	0.1146	0.1299	0.142

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

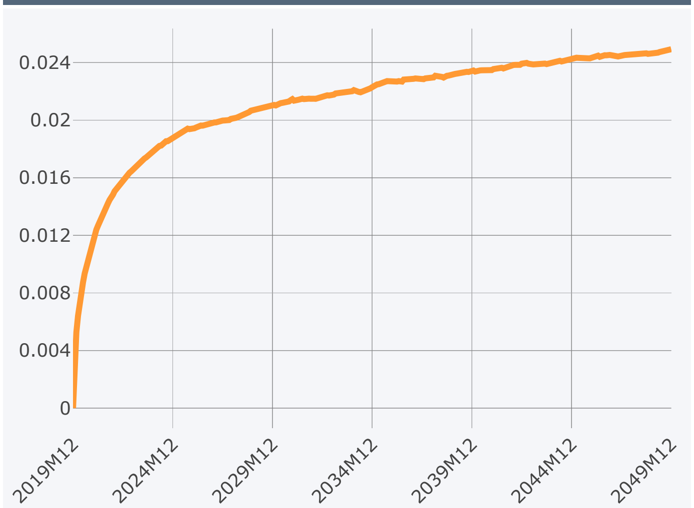
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0134	0.0146	0.0181	0.0207
std	0.0117	0.0211	0.0234	0.0249
min	-0.0266	-0.0481	-0.0451	-0.0459
1%	-0.0124	-0.0274	-0.0254	-0.0261
5%	-0.0052	-0.0167	-0.0156	-0.0148
10%	-0.0014	-0.0111	-0.0097	-0.0085
25%	0.0054	-0.0002	0.0015	0.0033
50%	0.0132	0.0131	0.0156	0.018
75%	0.0211	0.028	0.032	0.0353
90%	0.0285	0.0426	0.0492	0.0532
95%	0.0328	0.0517	0.0612	0.0658
99%	0.0416	0.069	0.0821	0.0927
max	0.0671	0.1317	0.1373	0.1666

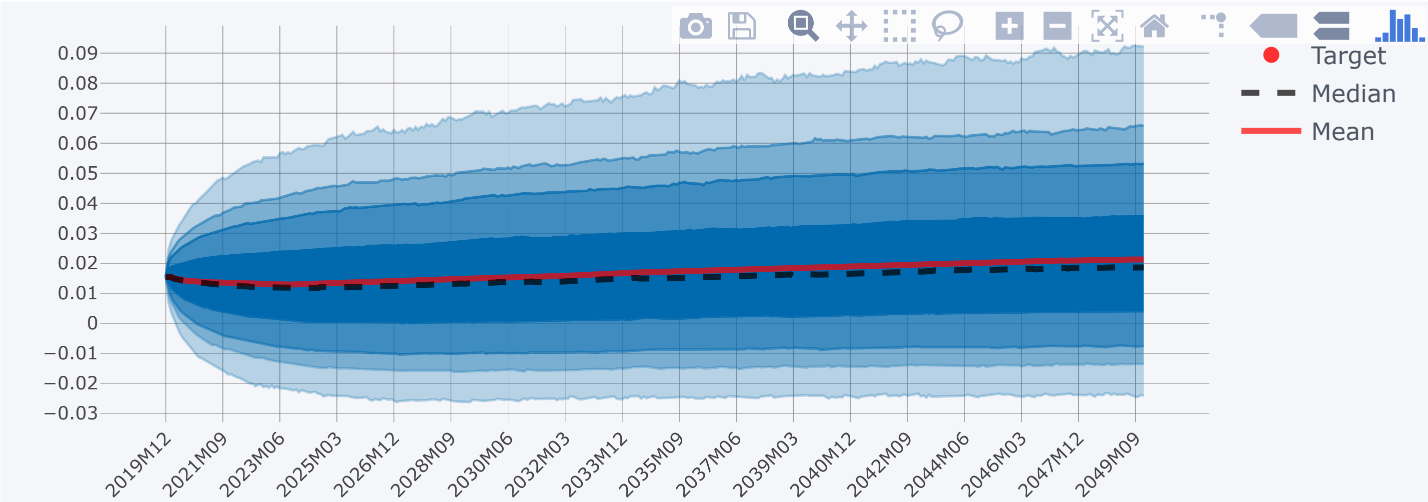
Cross Sectional Volatility Over Time



US Treasury 3 Month Yield - Coupon
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

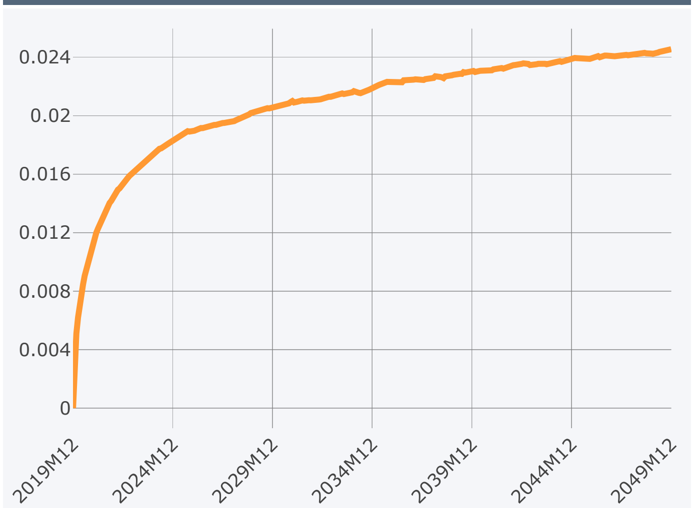
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

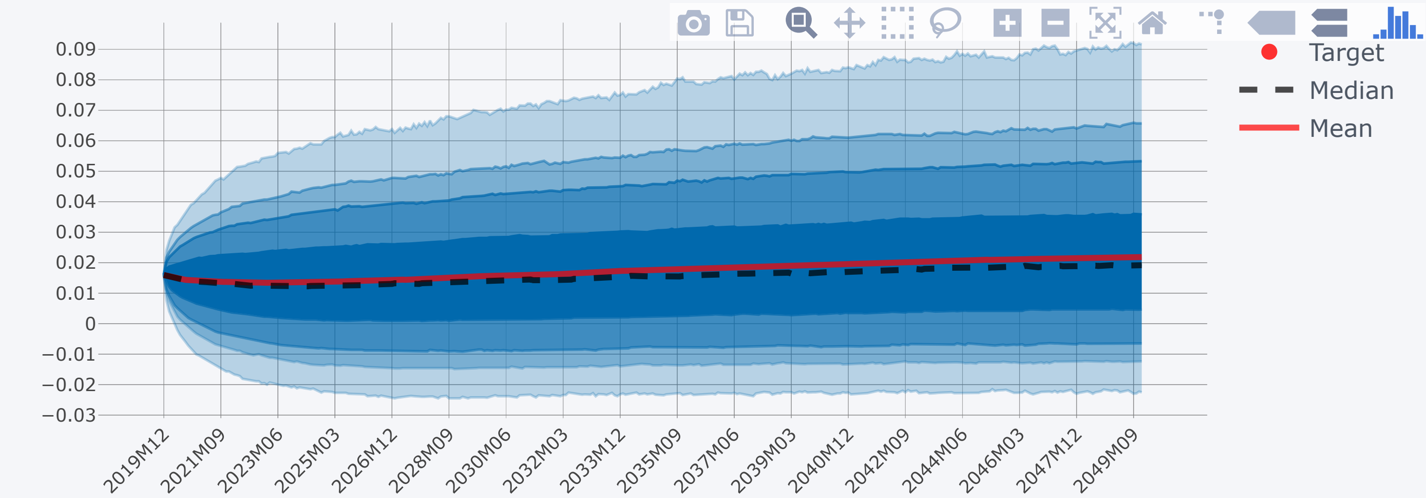
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0138	0.0151	0.0187	0.0213
std	0.0113	0.0206	0.023	0.0245
min	-0.0247	-0.0458	-0.0414	-0.0451
1%	-0.0113	-0.0256	-0.0238	-0.0242
5%	-0.0043	-0.0156	-0.0144	-0.0136
10%	-0.0005	-0.0102	-0.0085	-0.0076
25%	0.006	0.0005	0.0023	0.004
50%	0.0135	0.0135	0.0162	0.0186
75%	0.0213	0.0282	0.0322	0.0356
90%	0.0285	0.0426	0.0489	0.0532
95%	0.0327	0.0514	0.0612	0.0657
99%	0.0411	0.0688	0.0826	0.0922
max	0.0669	0.1296	0.1371	0.1681

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

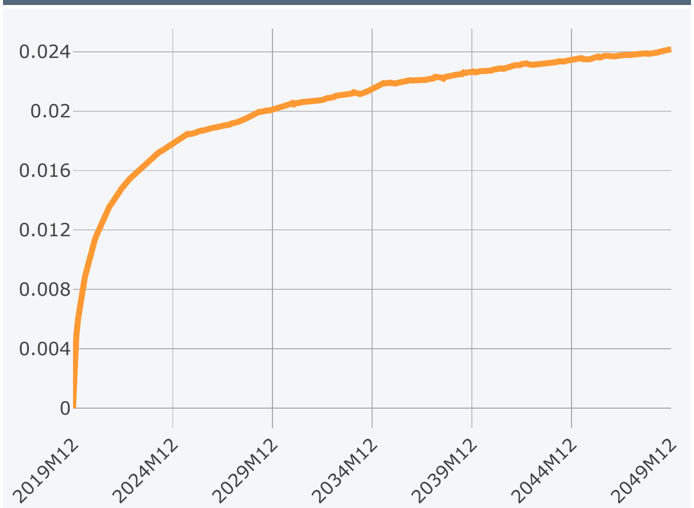
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

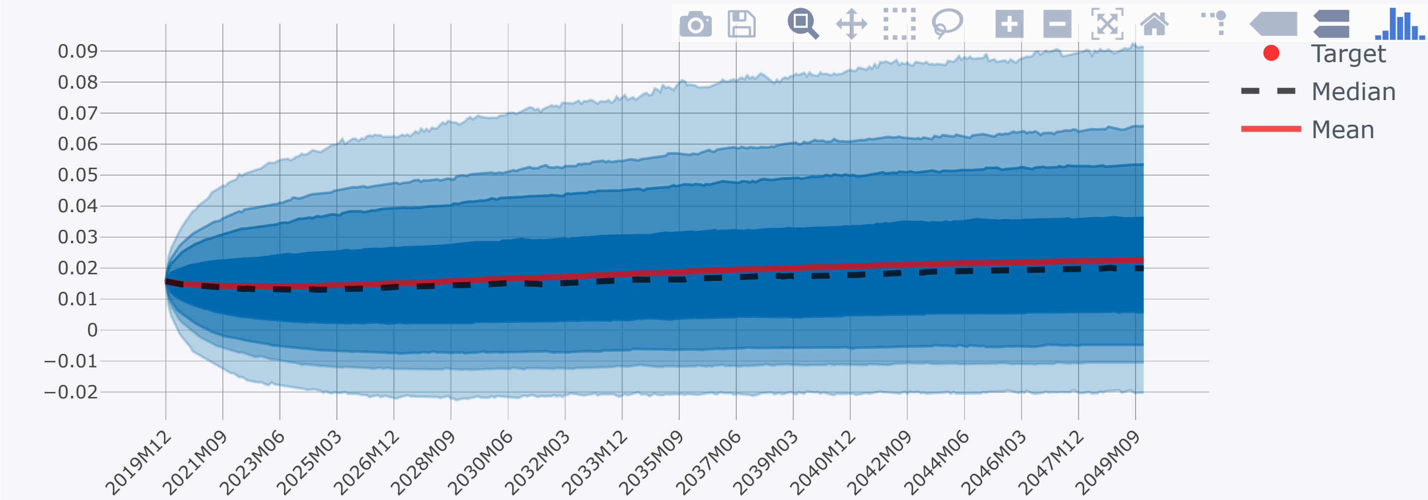
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0141	0.0157	0.0193	0.0218
std	0.0109	0.0201	0.0226	0.0242
min	-0.0229	-0.0432	-0.038	-0.0438
1%	-0.0101	-0.024	-0.0225	-0.0225
5%	-0.0033	-0.0144	-0.0132	-0.0124
10%	0.0004	-0.009	-0.0074	-0.0065
25%	0.0066	0.0014	0.0033	0.0047
50%	0.0139	0.0141	0.0167	0.0192
75%	0.0214	0.0283	0.0324	0.0358
90%	0.0284	0.0426	0.0492	0.0533
95%	0.0325	0.051	0.0611	0.0657
99%	0.0407	0.0685	0.0826	0.0916
max	0.0661	0.1276	0.1369	0.1691

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

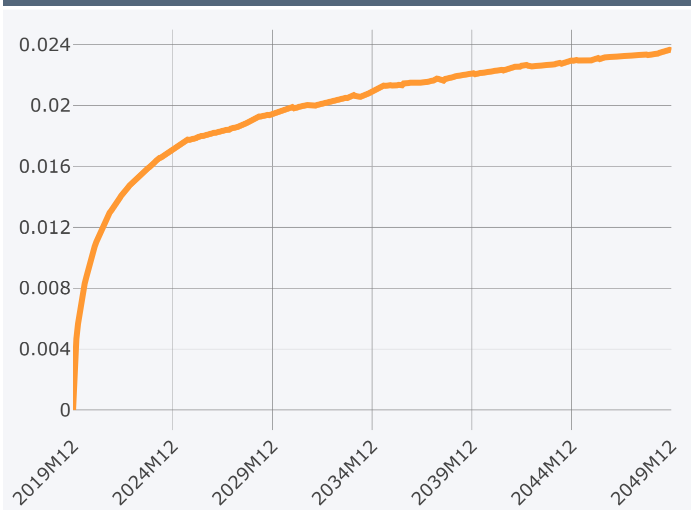
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

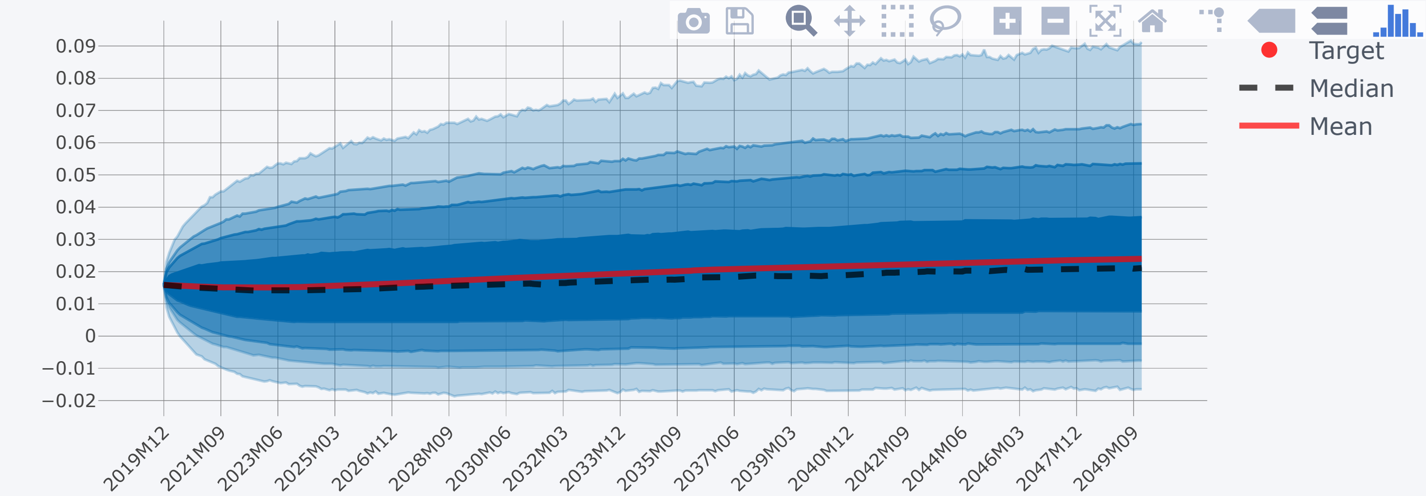
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0146	0.0165	0.0201	0.0227
std	0.0104	0.0195	0.0221	0.0236
min	-0.0211	-0.0396	-0.0338	-0.041
1%	-0.0083	-0.0213	-0.02	-0.0202
5%	-0.0019	-0.0124	-0.0114	-0.0105
10%	0.0016	-0.0073	-0.0058	-0.0048
25%	0.0075	0.0027	0.0044	0.0058
50%	0.0144	0.0149	0.0176	0.02
75%	0.0215	0.0287	0.033	0.0362
90%	0.0281	0.0425	0.0494	0.0535
95%	0.0322	0.0508	0.061	0.0658
99%	0.0401	0.0685	0.082	0.0913
max	0.0644	0.1249	0.1368	0.1698

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

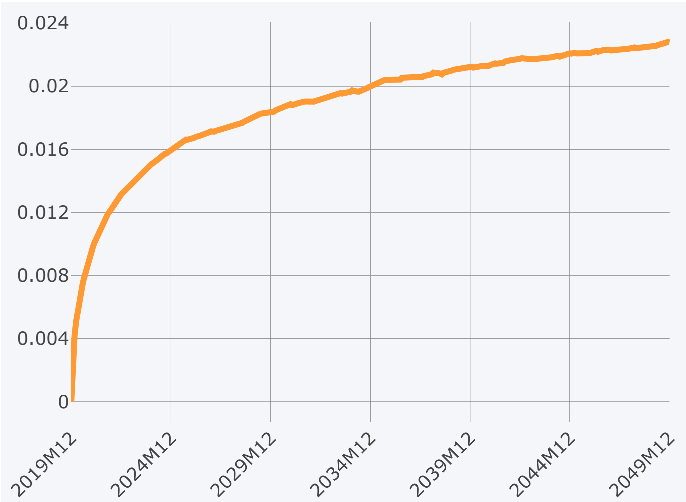
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

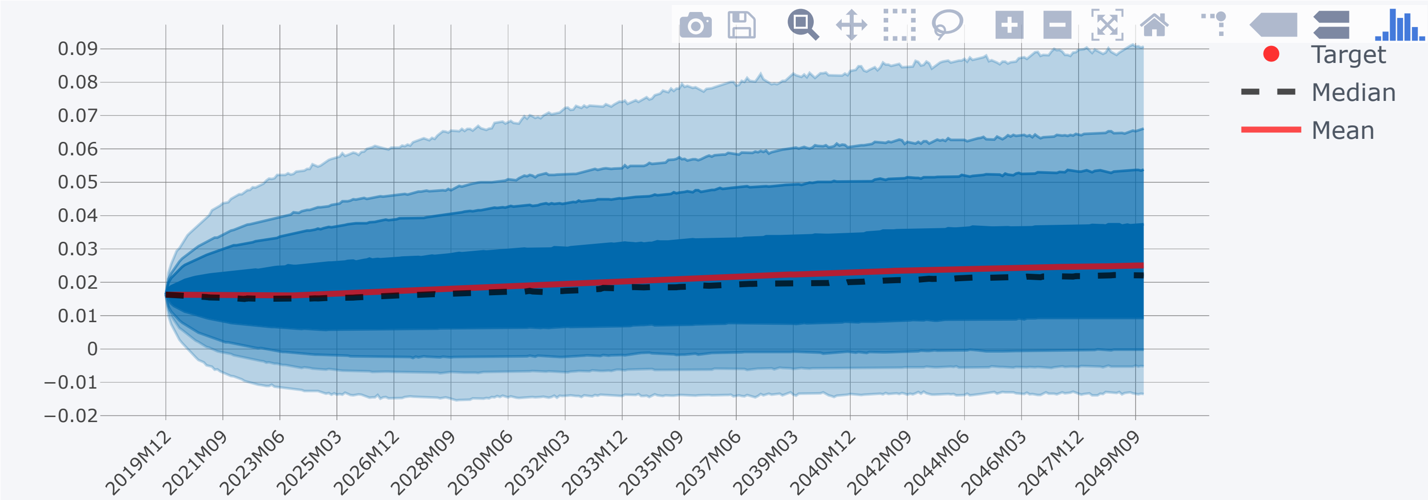
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0154	0.0177	0.0214	0.024
std	0.0095	0.0184	0.0212	0.0228
min	-0.0177	-0.0339	-0.0288	-0.0356
1%	-0.0057	-0.0175	-0.0164	-0.0165
5%	0.0002	-0.0094	-0.0084	-0.0077
10%	0.0034	-0.0046	-0.0032	-0.0024
25%	0.0089	0.0046	0.0064	0.0077
50%	0.0152	0.0161	0.0187	0.0211
75%	0.0217	0.0291	0.0335	0.0369
90%	0.0278	0.0422	0.0497	0.0536
95%	0.0313	0.0502	0.0608	0.0658
99%	0.0386	0.0672	0.0819	0.0912
max	0.0609	0.1212	0.1385	0.1699

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

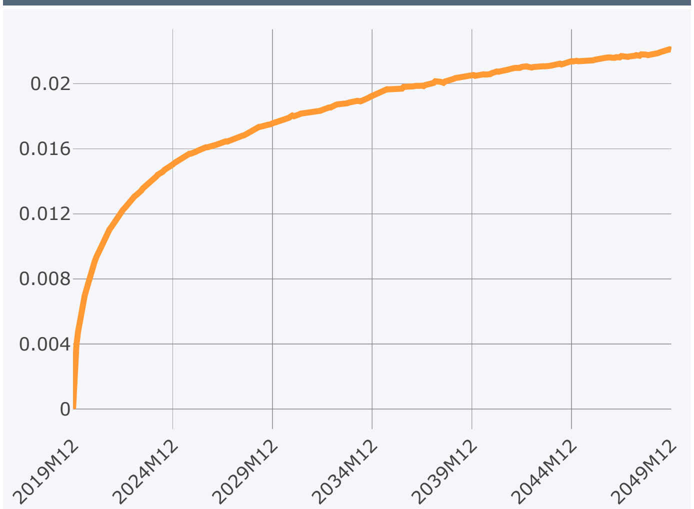
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

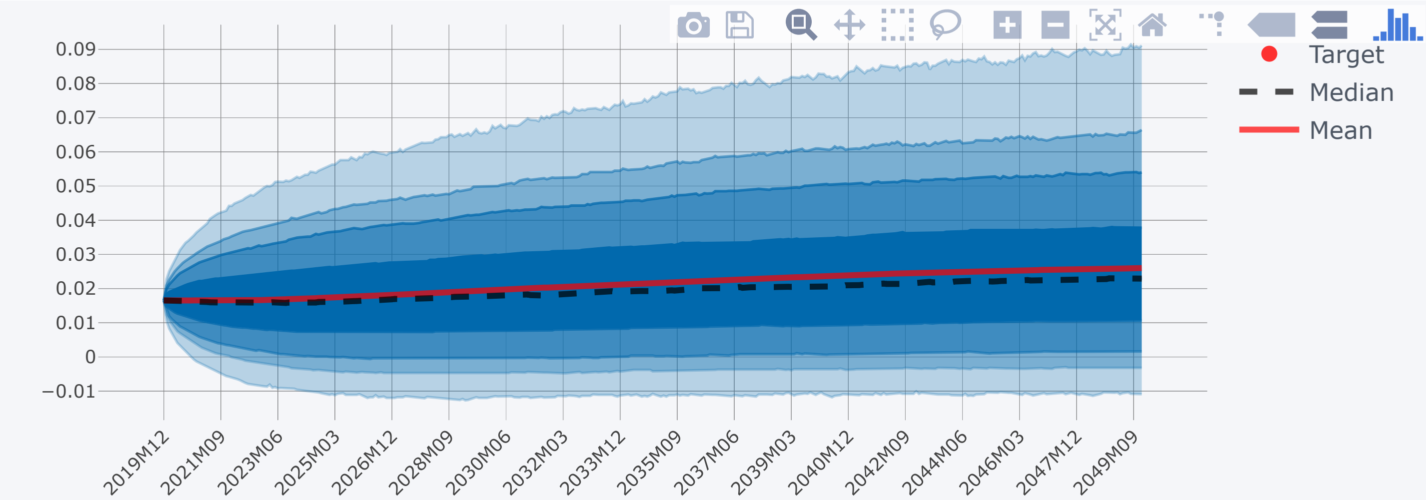
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.016	0.0188	0.0225	0.0251
std	0.0088	0.0176	0.0205	0.0221
min	-0.0147	-0.0292	-0.0249	-0.0309
1%	-0.0033	-0.0144	-0.0136	-0.0135
5%	0.0021	-0.0068	-0.0059	-0.0052
10%	0.0049	-0.0025	-0.001	-0.0002
25%	0.01	0.0063	0.0079	0.0093
50%	0.0158	0.017	0.0196	0.0221
75%	0.0218	0.0293	0.0342	0.0374
90%	0.0273	0.0422	0.0501	0.0538
95%	0.0308	0.05	0.0609	0.0661
99%	0.0373	0.0662	0.082	0.0907
max	0.058	0.1185	0.1401	0.1697

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

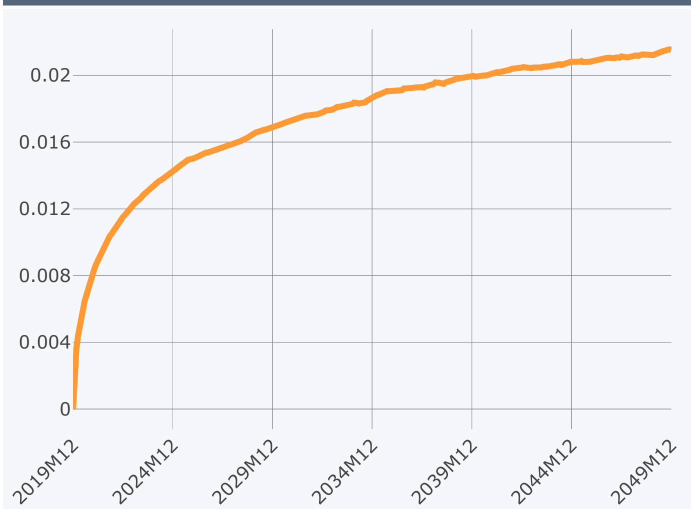
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

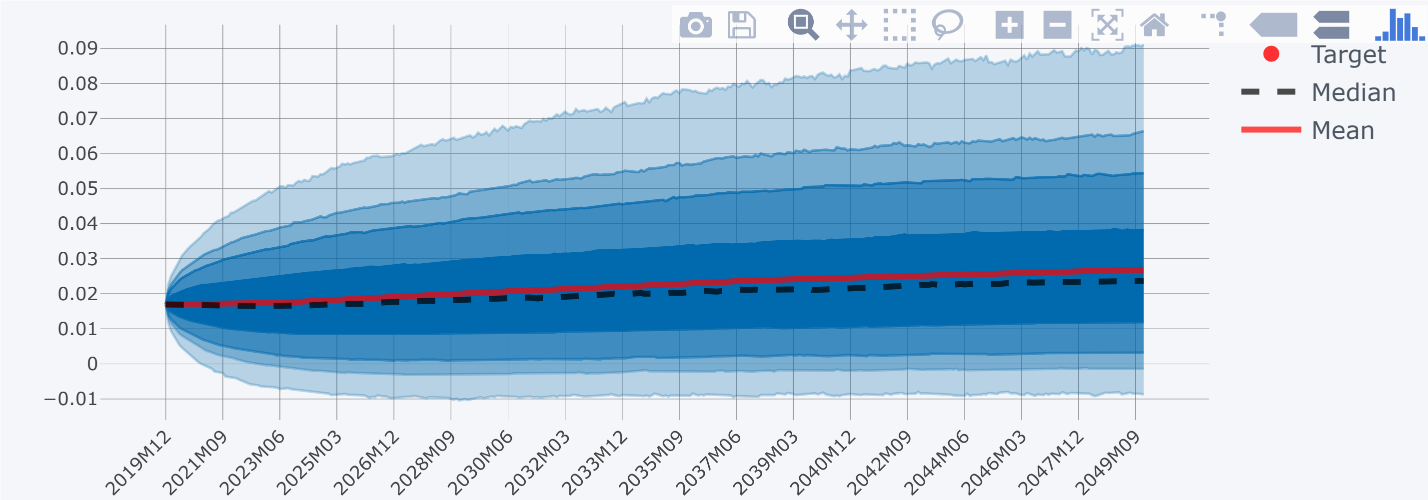
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0165	0.0197	0.0235	0.026
std	0.0082	0.0169	0.0199	0.0215
min	-0.0121	-0.0252	-0.0214	-0.0269
1%	-0.0013	-0.0117	-0.0111	-0.0109
5%	0.0037	-0.0047	-0.0038	-0.0032
10%	0.0063	-0.0007	0.0008	0.0016
25%	0.0109	0.0077	0.0092	0.0107
50%	0.0163	0.0179	0.0204	0.0229
75%	0.022	0.0298	0.0346	0.0378
90%	0.0271	0.0423	0.0503	0.054
95%	0.0303	0.0499	0.061	0.0664
99%	0.0364	0.066	0.0818	0.0911
max	0.0556	0.1195	0.1414	0.1695

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

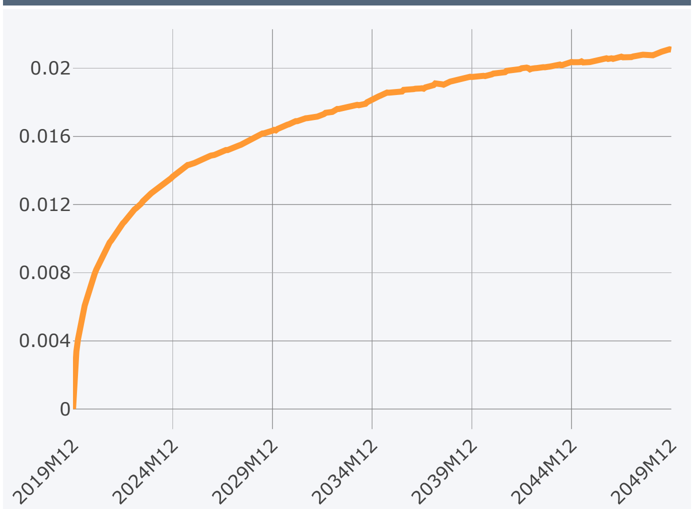
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

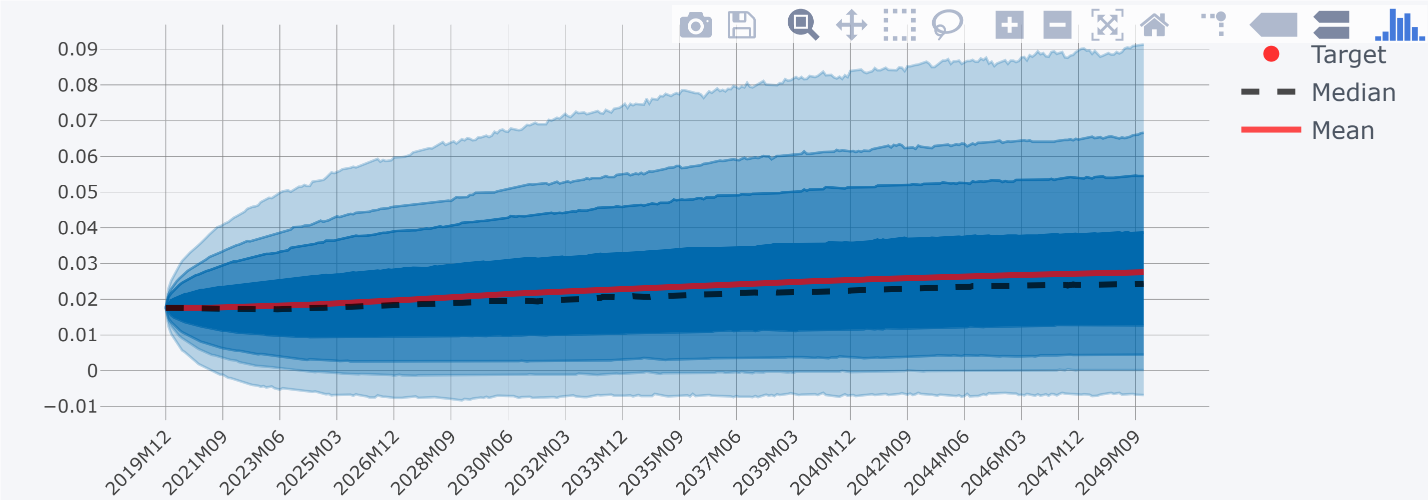
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0171	0.0205	0.0243	0.0268
std	0.0077	0.0163	0.0195	0.0211
min	-0.0098	-0.0217	-0.0182	-0.0233
1%	0.0005	-0.0093	-0.0087	-0.0087
5%	0.005	-0.0029	-0.002	-0.0014
10%	0.0074	0.0009	0.0023	0.0032
25%	0.0118	0.0088	0.0104	0.0119
50%	0.0168	0.0187	0.0212	0.0237
75%	0.0222	0.0302	0.0351	0.0382
90%	0.0269	0.0423	0.0506	0.0544
95%	0.03	0.05	0.0612	0.0664
99%	0.0357	0.066	0.0825	0.0911
max	0.0535	0.1207	0.1423	0.1692

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

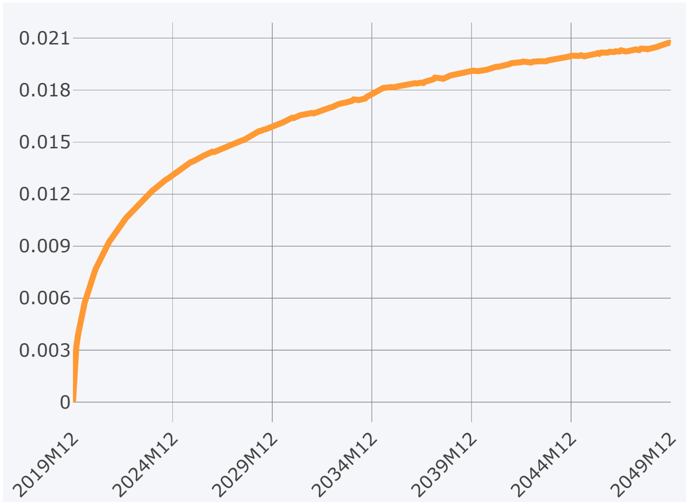
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

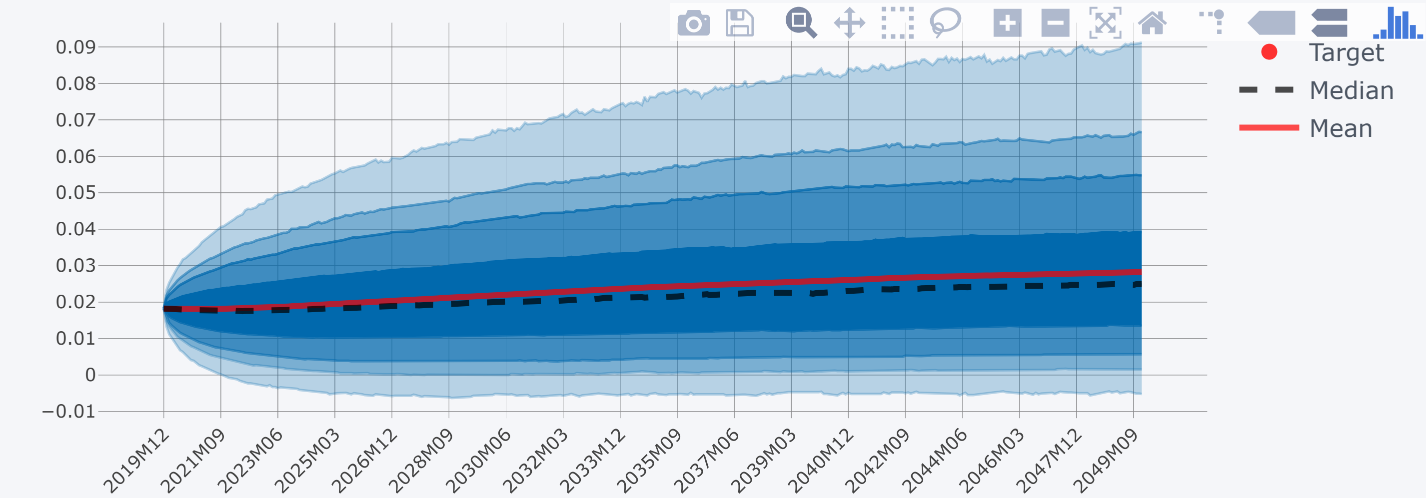
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0176	0.0212	0.0251	0.0276
std	0.0073	0.0159	0.0191	0.0207
min	-0.0077	-0.0187	-0.0155	-0.0202
1%	0.0019	-0.0073	-0.0068	-0.0068
5%	0.0061	-0.0013	-0.0005	0.0002
10%	0.0084	0.0023	0.0037	0.0045
25%	0.0126	0.0099	0.0114	0.0127
50%	0.0173	0.0194	0.0218	0.0243
75%	0.0224	0.0306	0.0356	0.0387
90%	0.0269	0.0424	0.0509	0.0545
95%	0.0298	0.05	0.0612	0.0666
99%	0.0351	0.0658	0.0825	0.0913
max	0.0518	0.1217	0.1431	0.1689

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

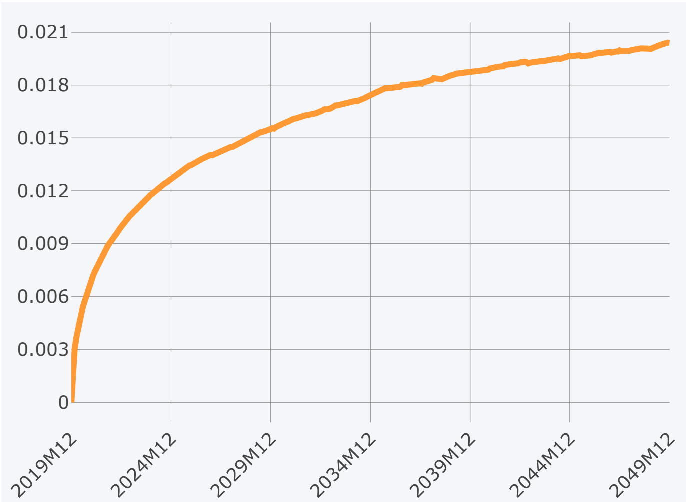
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.018	0.0219	0.0258	0.0282
std	0.0069	0.0155	0.0188	0.0204
min	-0.0059	-0.016	-0.013	-0.0174
1%	0.0032	-0.0055	-0.005	-0.0052
5%	0.0072	0.0001	0.0009	0.0015
10%	0.0093	0.0036	0.0049	0.0057
25%	0.0132	0.0107	0.0123	0.0135
50%	0.0178	0.0201	0.0224	0.0249
75%	0.0226	0.031	0.0361	0.0392
90%	0.027	0.0425	0.0512	0.0548
95%	0.0297	0.0502	0.0616	0.0666
99%	0.0348	0.066	0.0825	0.0912
max	0.0504	0.1224	0.1436	0.1686

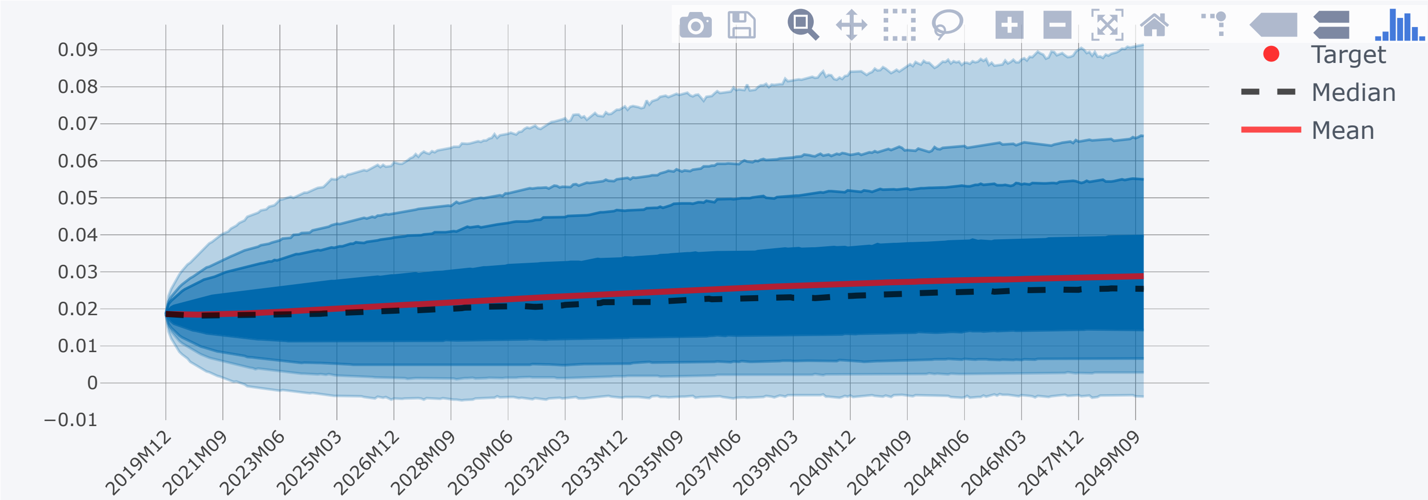
Cross Sectional Volatility Over Time



US Treasury 8 Year Yield - Coupon
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

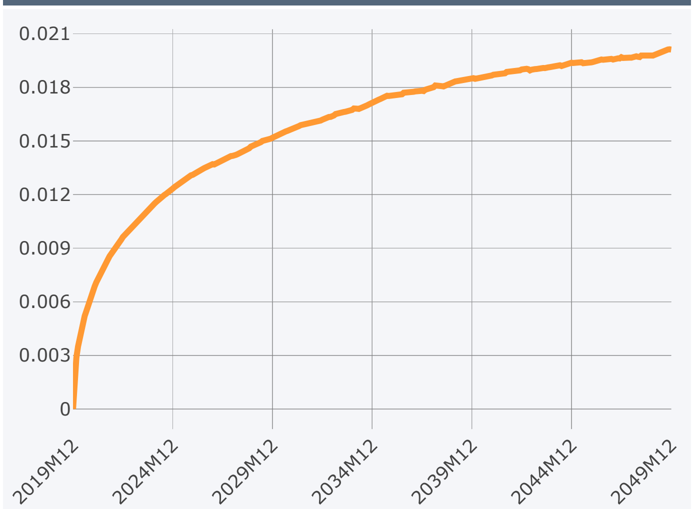
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0184	0.0225	0.0264	0.0289
std	0.0066	0.0152	0.0185	0.0201
min	-0.0043	-0.0137	-0.0109	-0.015
1%	0.0044	-0.004	-0.0034	-0.0037
5%	0.0081	0.0013	0.0022	0.0028
10%	0.0101	0.0047	0.006	0.0066
25%	0.0138	0.0115	0.0132	0.0143
50%	0.0182	0.0207	0.0229	0.0254
75%	0.0228	0.0313	0.0364	0.0397
90%	0.027	0.0426	0.0515	0.055
95%	0.0297	0.0506	0.0616	0.0667
99%	0.0347	0.0662	0.0825	0.0914
max	0.0492	0.123	0.1441	0.1684

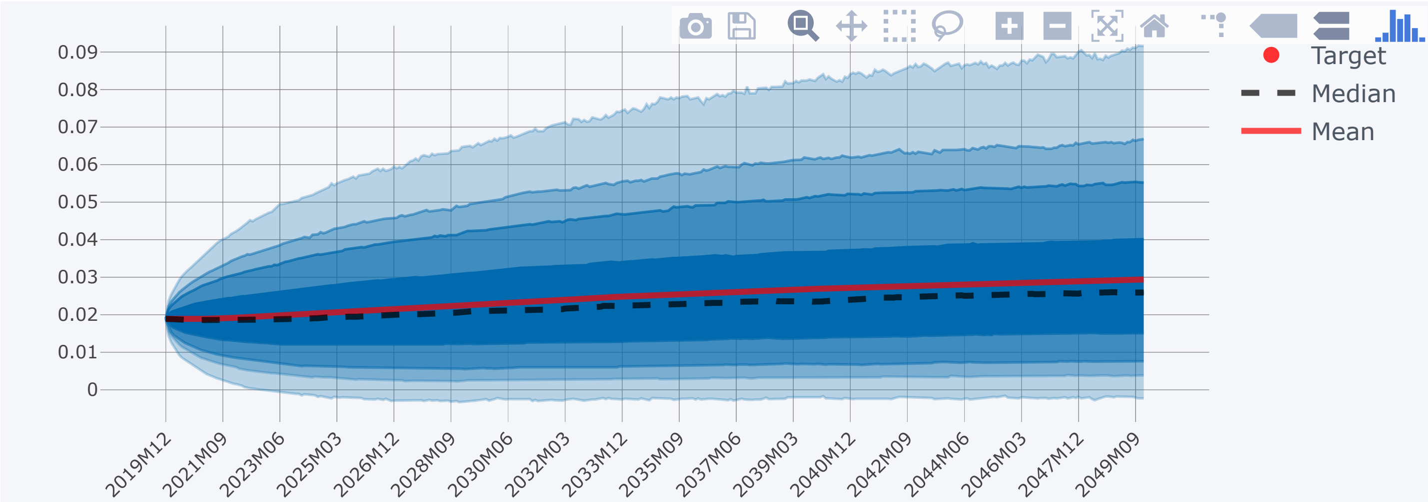
Cross Sectional Volatility Over Time



US Treasury 9 Year Yield - Coupon
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

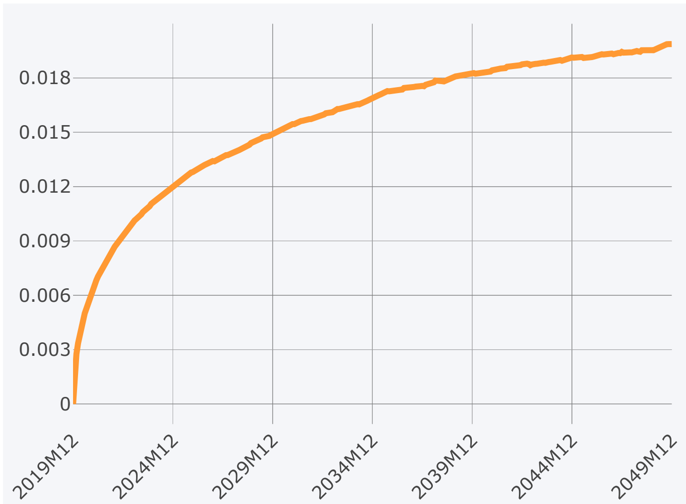
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

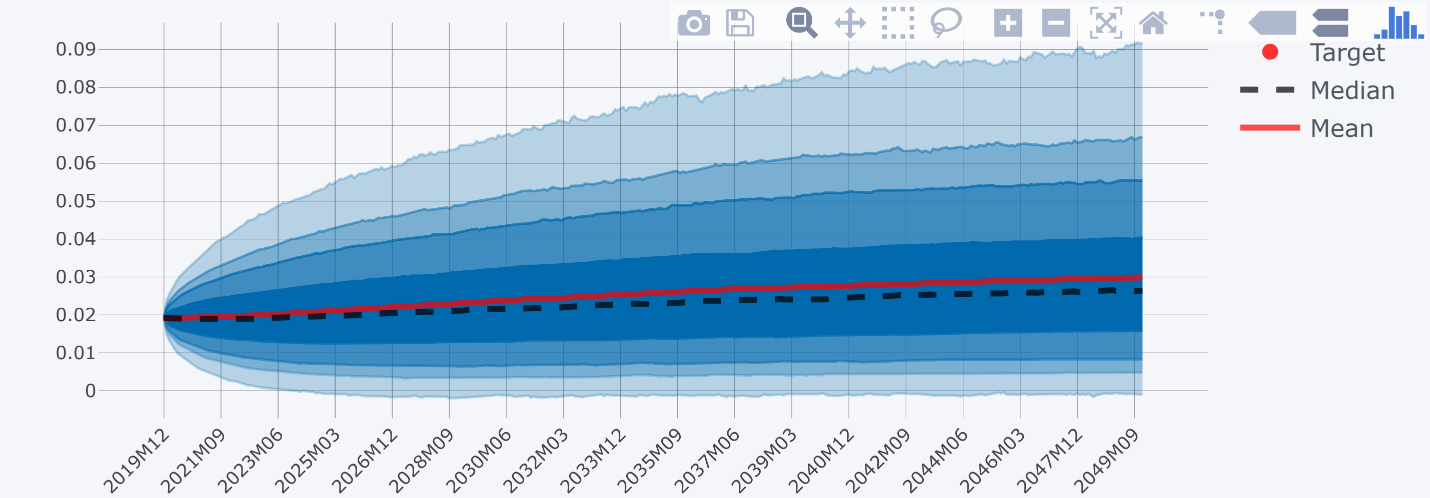
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0189	0.0231	0.0269	0.0294
std	0.0064	0.0149	0.0183	0.0199
min	-0.0029	-0.0116	-0.0089	-0.0128
1%	0.0053	-0.0025	-0.0022	-0.0023
5%	0.0089	0.0024	0.0033	0.0038
10%	0.0109	0.0057	0.0069	0.0076
25%	0.0144	0.0123	0.0139	0.0151
50%	0.0186	0.0212	0.0234	0.0259
75%	0.0231	0.0317	0.0368	0.0401
90%	0.0272	0.0428	0.0515	0.0552
95%	0.0297	0.0506	0.0617	0.0668
99%	0.0347	0.0662	0.0831	0.0916
max	0.0481	0.1235	0.1444	0.1681

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

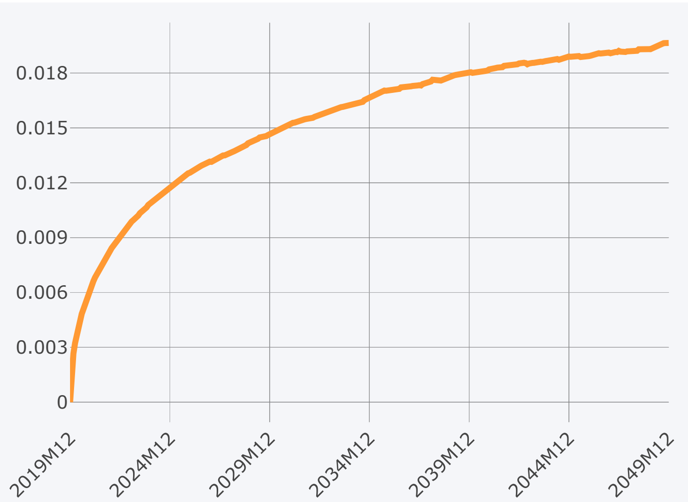
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

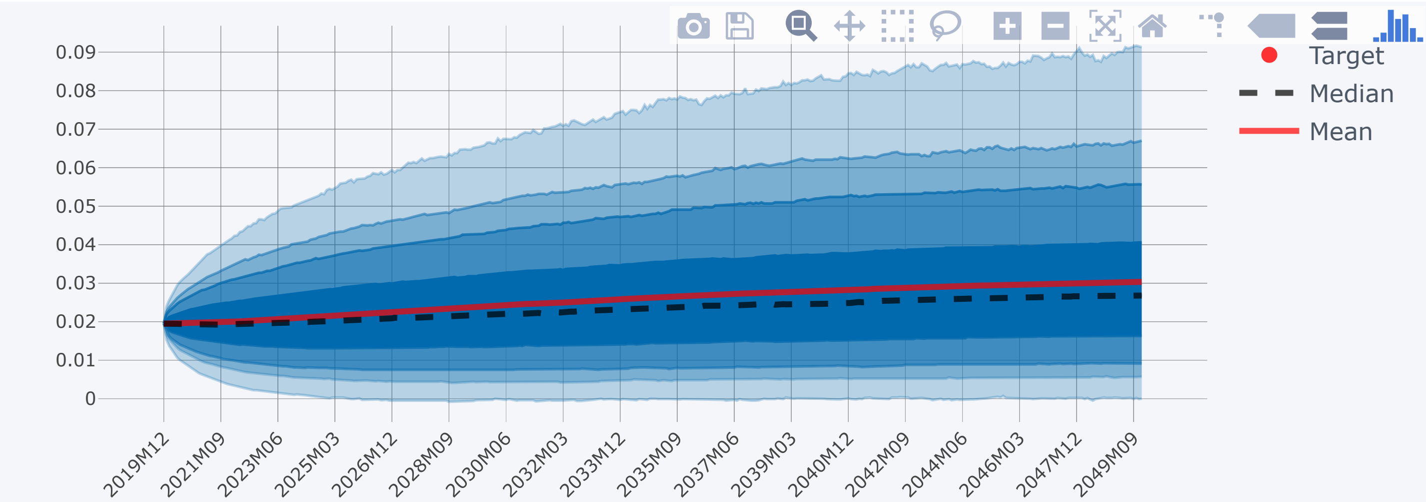
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0192	0.0236	0.0274	0.0299
std	0.0062	0.0147	0.018	0.0196
min	-0.0016	-0.0097	-0.0073	-0.0109
1%	0.0062	-0.0013	-0.001	-0.001
5%	0.0097	0.0034	0.0042	0.0048
10%	0.0115	0.0066	0.0076	0.0083
25%	0.015	0.013	0.0145	0.0158
50%	0.0189	0.0217	0.0239	0.0263
75%	0.0233	0.032	0.0372	0.0404
90%	0.0273	0.0429	0.0518	0.0554
95%	0.0297	0.0507	0.0619	0.0669
99%	0.0346	0.0664	0.0829	0.0915
max	0.0473	0.1239	0.1446	0.1678

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

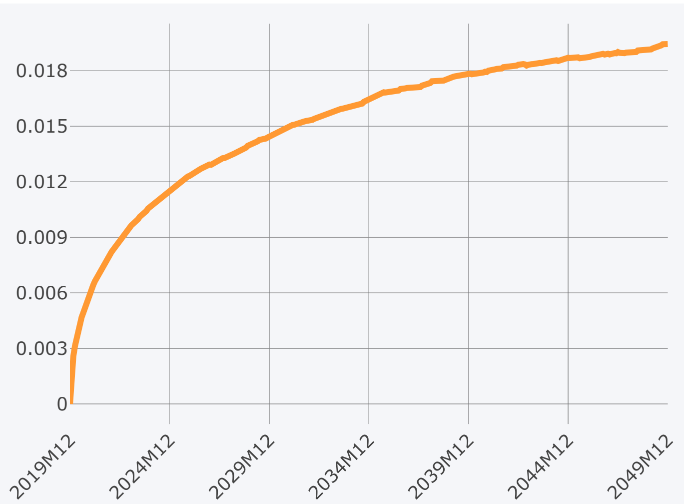
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

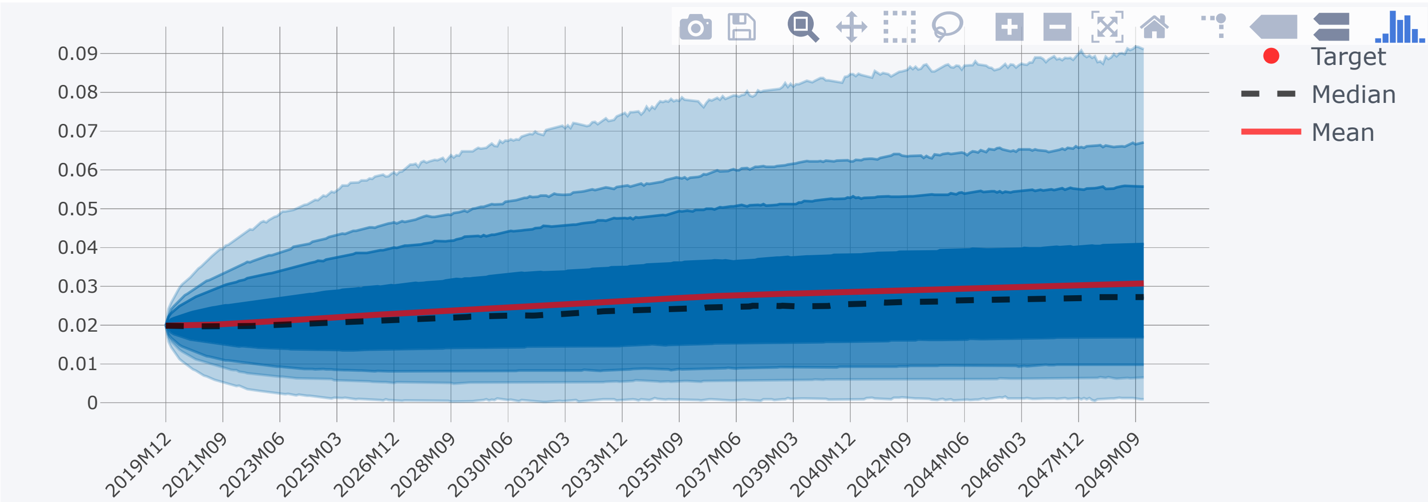
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0196	0.024	0.0279	0.0303
std	0.006	0.0144	0.0178	0.0194
min	-0.0004	-0.0081	-0.0058	-0.0092
1%	0.0071	-0.0002	0	0
5%	0.0103	0.0043	0.005	0.0057
10%	0.0122	0.0074	0.0083	0.0091
25%	0.0155	0.0136	0.0151	0.0163
50%	0.0193	0.0221	0.0243	0.0268
75%	0.0235	0.0324	0.0374	0.0406
90%	0.0274	0.0431	0.052	0.0556
95%	0.0298	0.051	0.0621	0.067
99%	0.0346	0.0666	0.0832	0.0913
max	0.0465	0.1241	0.1447	0.1675

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

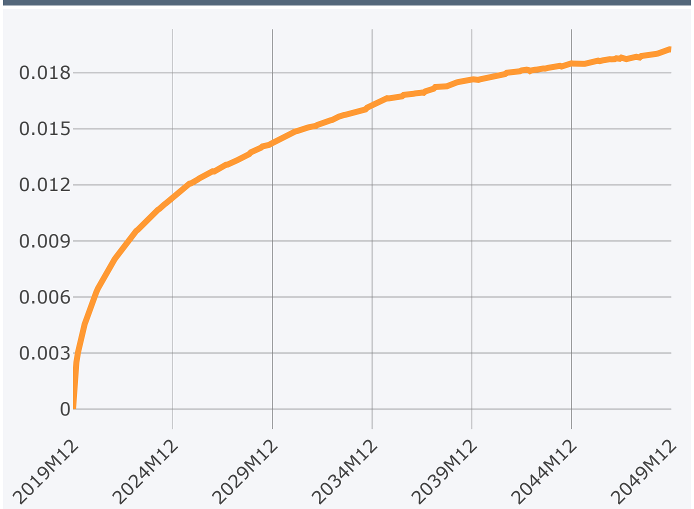
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

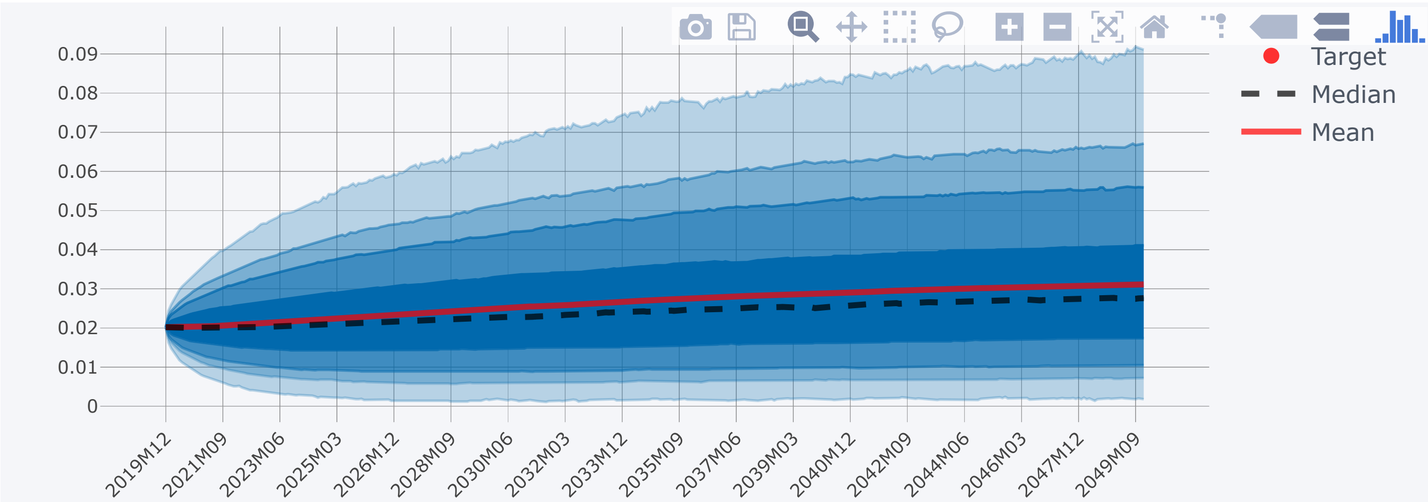
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.02	0.0245	0.0283	0.0308
std	0.0058	0.0142	0.0176	0.0193
min	0.0007	-0.0066	-0.0045	-0.0076
1%	0.0078	0.0008	0.0009	0.0009
5%	0.011	0.0051	0.0059	0.0065
10%	0.0127	0.0081	0.009	0.0098
25%	0.0159	0.0142	0.0156	0.0169
50%	0.0197	0.0225	0.0248	0.0272
75%	0.0238	0.0327	0.0377	0.0409
90%	0.0276	0.0433	0.0522	0.0557
95%	0.03	0.0512	0.0622	0.0671
99%	0.0346	0.0668	0.0834	0.0911
max	0.0459	0.1243	0.1447	0.1673

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

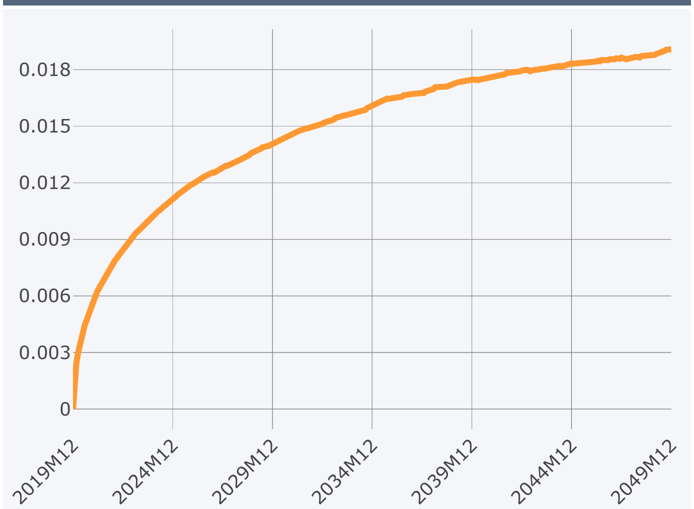
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

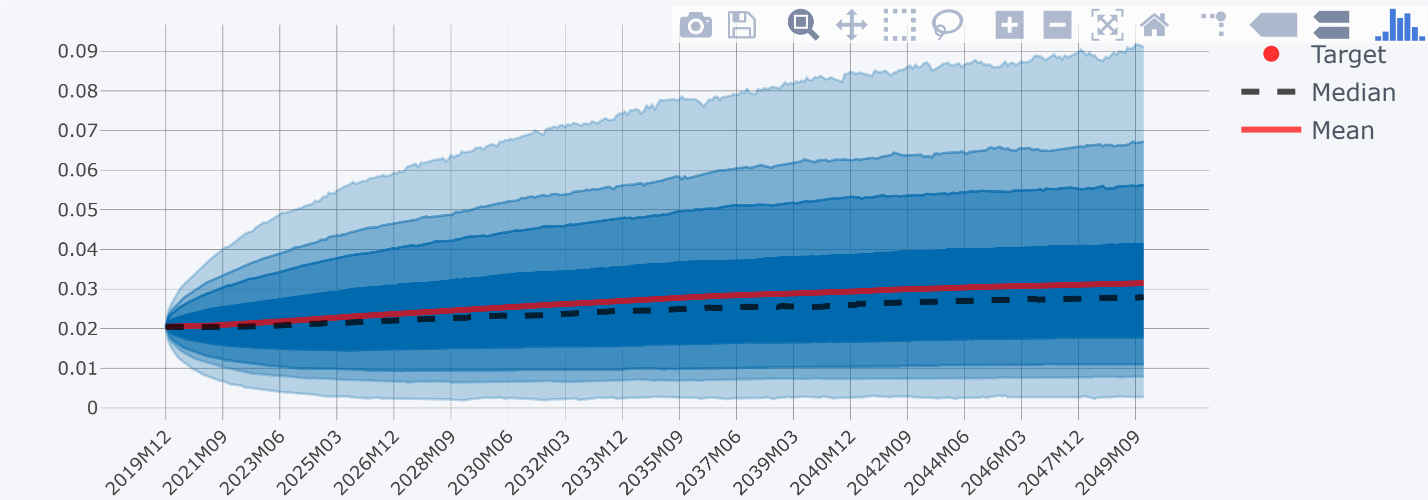
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0203	0.0249	0.0287	0.0311
std	0.0057	0.0141	0.0175	0.0191
min	0.0017	-0.0052	-0.0033	-0.0062
1%	0.0085	0.0018	0.0018	0.0018
5%	0.0115	0.0059	0.0067	0.0072
10%	0.0132	0.0088	0.0097	0.0105
25%	0.0164	0.0147	0.0161	0.0174
50%	0.02	0.0228	0.0252	0.0276
75%	0.024	0.0329	0.038	0.0411
90%	0.0277	0.0435	0.0523	0.0559
95%	0.0301	0.0514	0.0622	0.0671
99%	0.0347	0.0668	0.0833	0.0911
max	0.0454	0.1244	0.1447	0.167

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

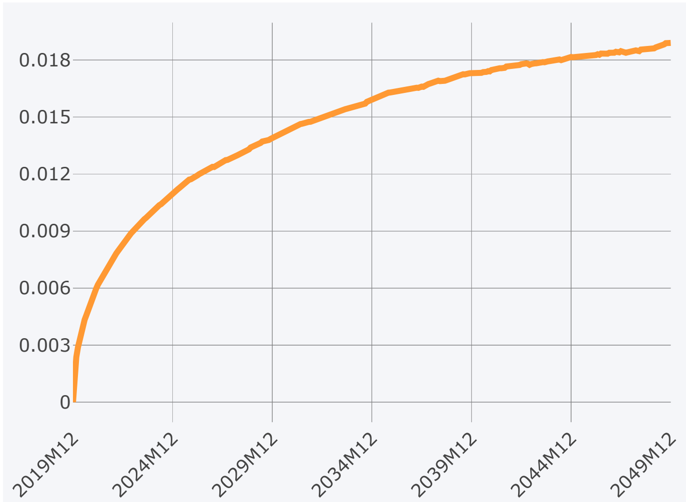
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

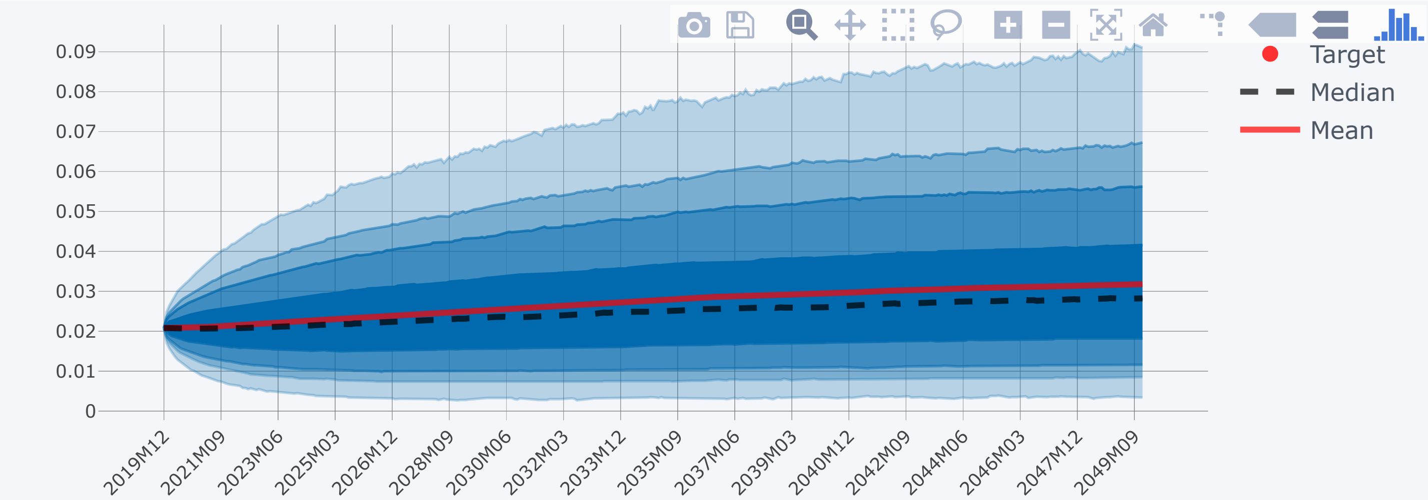
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0207	0.0253	0.0291	0.0315
std	0.0056	0.0139	0.0173	0.0189
min	0.0026	-0.004	-0.0023	-0.0049
1%	0.009	0.0026	0.0027	0.0027
5%	0.0121	0.0066	0.0073	0.0079
10%	0.0137	0.0094	0.0103	0.011
25%	0.0168	0.0152	0.0166	0.0178
50%	0.0203	0.0232	0.0255	0.0279
75%	0.0243	0.0332	0.0383	0.0414
90%	0.0279	0.0436	0.0524	0.0561
95%	0.0302	0.0515	0.0624	0.0672
99%	0.0347	0.0666	0.0833	0.0911
max	0.0449	0.1245	0.1447	0.1667

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

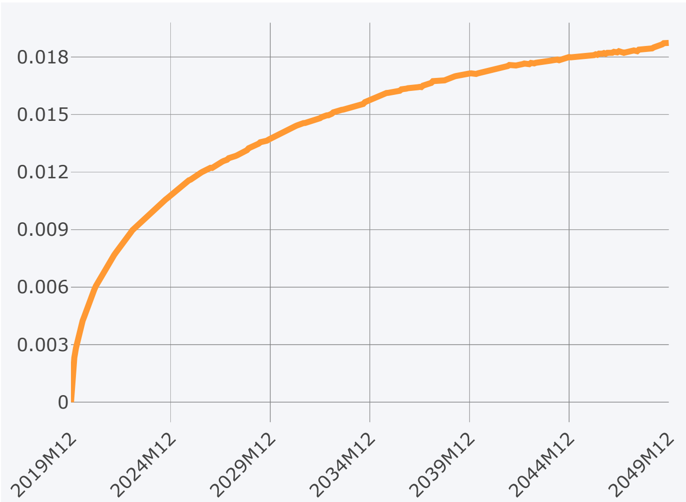
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.021	0.0256	0.0294	0.0318
std	0.0054	0.0137	0.0171	0.0187
min	0.0034	-0.0028	-0.0015	-0.0038
1%	0.0096	0.0033	0.0034	0.0034
5%	0.0126	0.0072	0.0079	0.0085
10%	0.0142	0.01	0.0109	0.0116
25%	0.0172	0.0156	0.017	0.0182
50%	0.0206	0.0235	0.0258	0.0282
75%	0.0245	0.0334	0.0385	0.0416
90%	0.0281	0.0437	0.0525	0.0562
95%	0.0304	0.0515	0.0625	0.0673
99%	0.0347	0.0666	0.0831	0.091
max	0.0445	0.1245	0.1446	0.1665

Cross Sectional Volatility Over Time



US Treasury 16 Year Yield - Coupon
Conning | Risk Solutions

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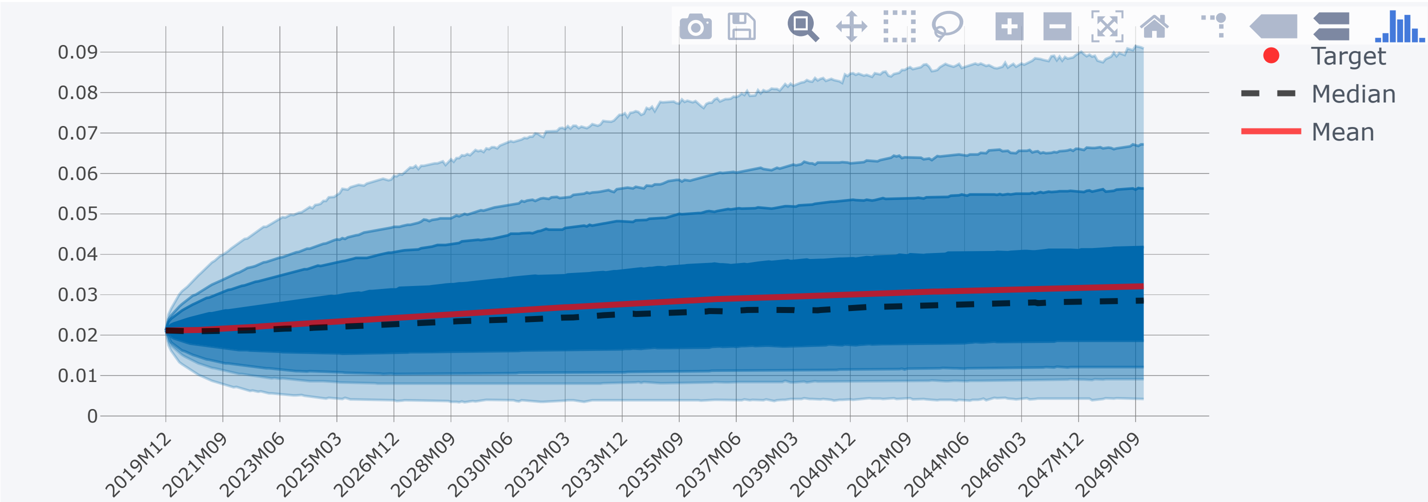
Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

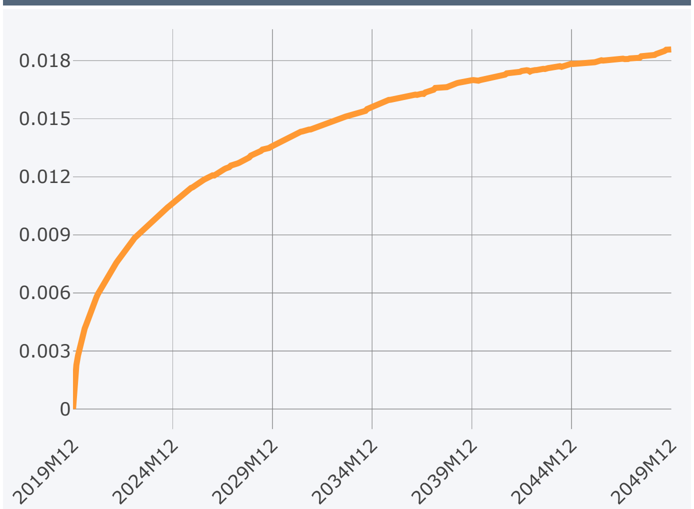
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

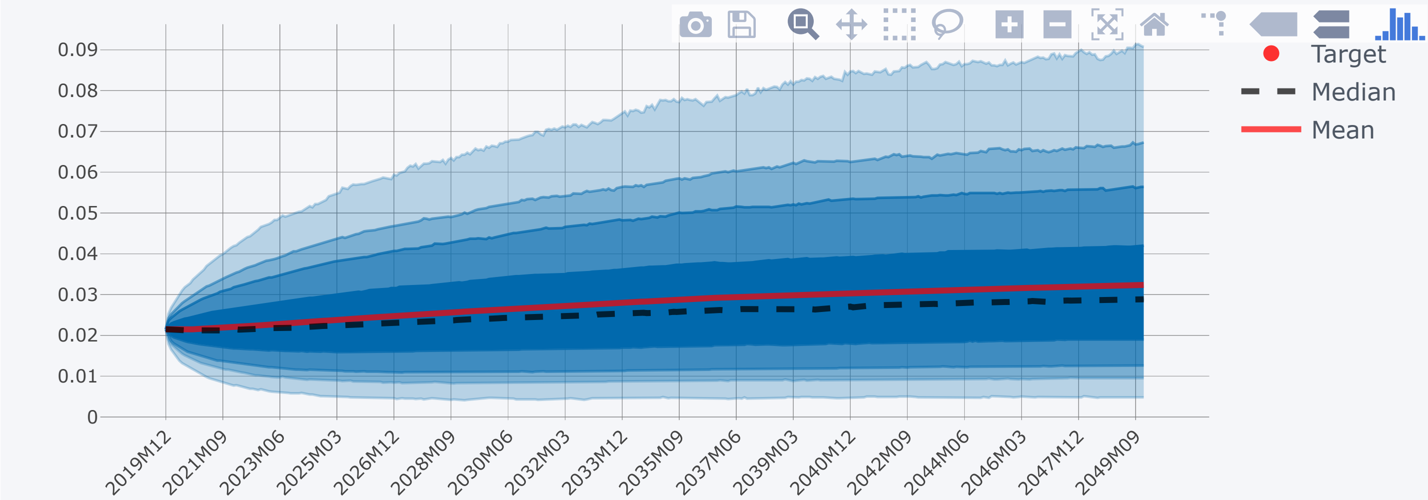
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0213	0.0259	0.0297	0.0321
std	0.0053	0.0136	0.017	0.0186
min	0.0042	-0.0018	-0.0006	-0.0027
1%	0.0102	0.004	0.0042	0.0042
5%	0.013	0.0078	0.0085	0.0091
10%	0.0146	0.0106	0.0114	0.0121
25%	0.0175	0.0161	0.0175	0.0186
50%	0.0209	0.0238	0.0261	0.0285
75%	0.0247	0.0336	0.0387	0.0418
90%	0.0283	0.0438	0.0526	0.0563
95%	0.0305	0.0516	0.0627	0.0672
99%	0.0348	0.0665	0.083	0.0909
max	0.0446	0.1245	0.1446	0.1662

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

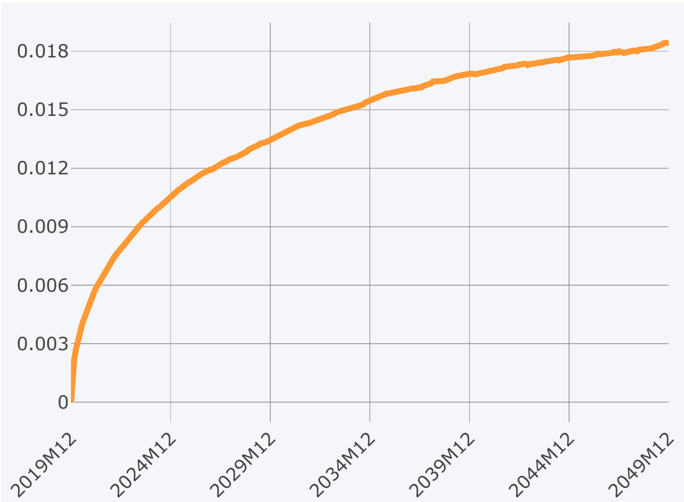
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

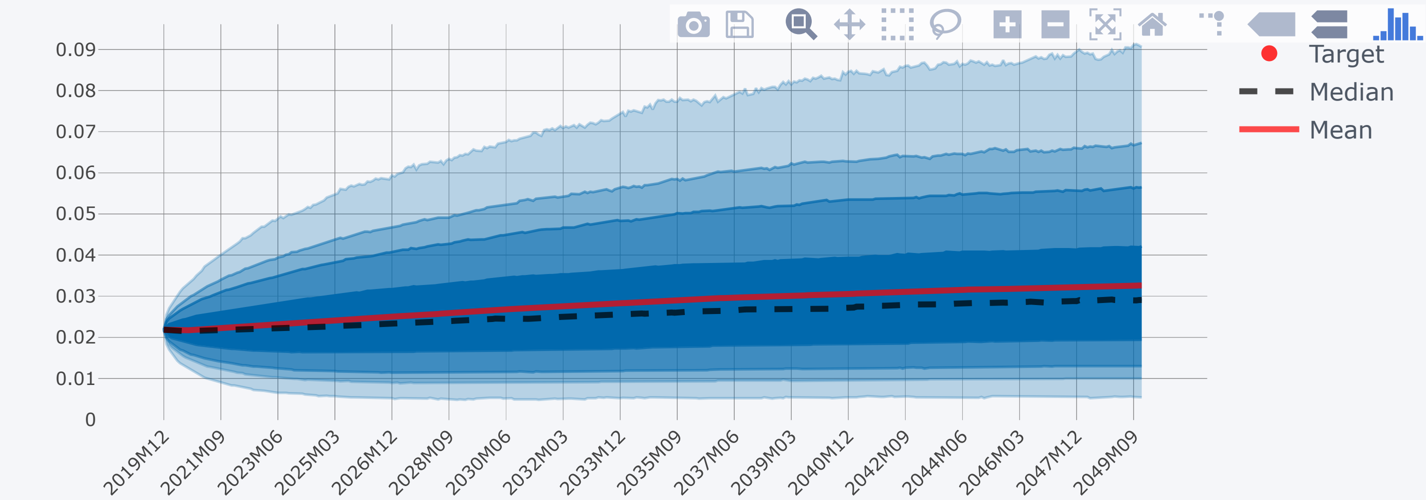
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0216	0.0262	0.03	0.0324
std	0.0053	0.0134	0.0168	0.0184
min	0.005	-0.0008	0.0001	-0.0017
1%	0.0107	0.0047	0.0048	0.0048
5%	0.0135	0.0083	0.0091	0.0095
10%	0.015	0.011	0.0118	0.0126
25%	0.0179	0.0165	0.0179	0.019
50%	0.0212	0.0241	0.0264	0.0288
75%	0.025	0.0339	0.0388	0.042
90%	0.0285	0.0438	0.0527	0.0564
95%	0.0307	0.0516	0.0627	0.0673
99%	0.0349	0.0665	0.0829	0.0907
max	0.0448	0.1244	0.1445	0.166

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

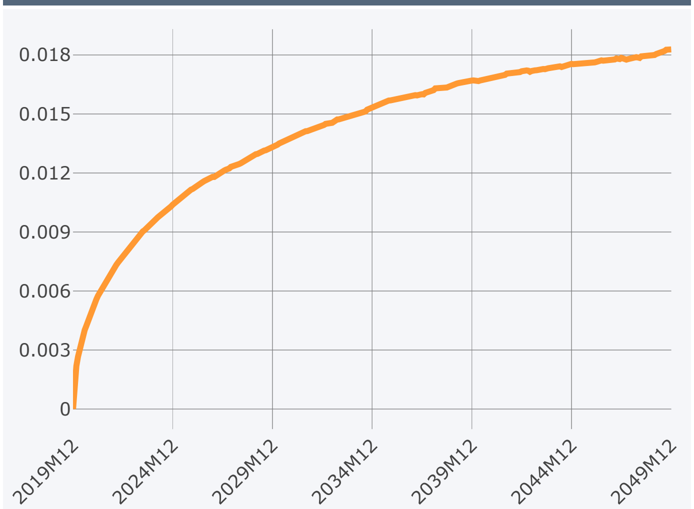
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

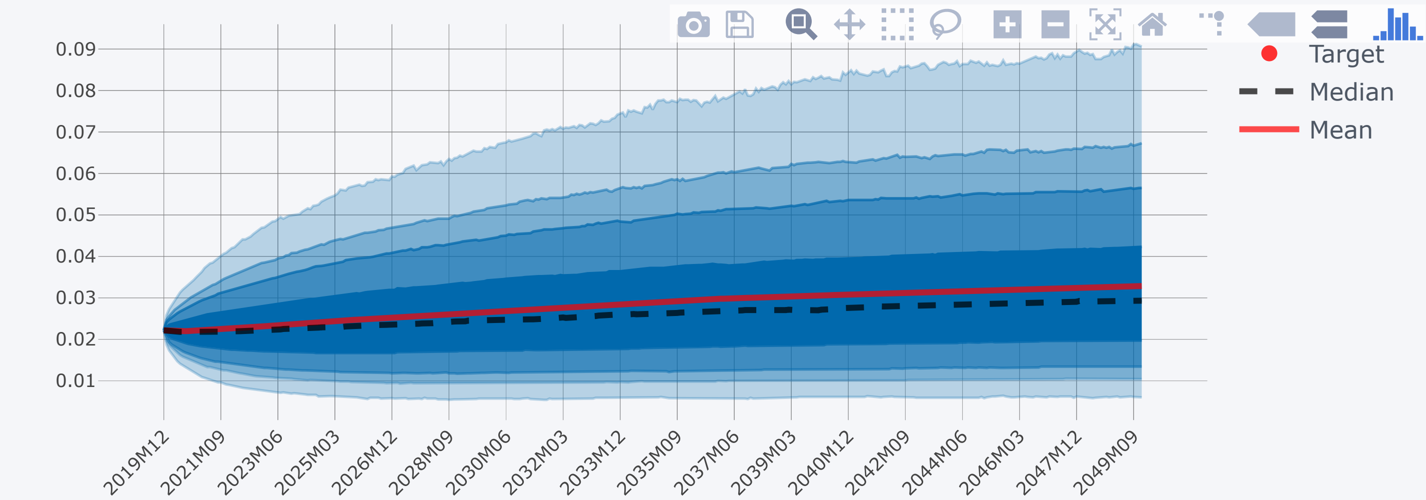
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0218	0.0265	0.0303	0.0326
std	0.0052	0.0133	0.0167	0.0183
min	0.0056	0.0001	0.0008	-0.0008
1%	0.0112	0.0053	0.0055	0.0054
5%	0.0139	0.0089	0.0096	0.01
10%	0.0154	0.0115	0.0123	0.013
25%	0.0182	0.0168	0.0183	0.0194
50%	0.0215	0.0244	0.0267	0.0291
75%	0.0252	0.0341	0.039	0.0421
90%	0.0286	0.0439	0.0528	0.0565
95%	0.0308	0.0517	0.0627	0.0673
99%	0.035	0.0664	0.0829	0.0906
max	0.0449	0.1243	0.1443	0.1657

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

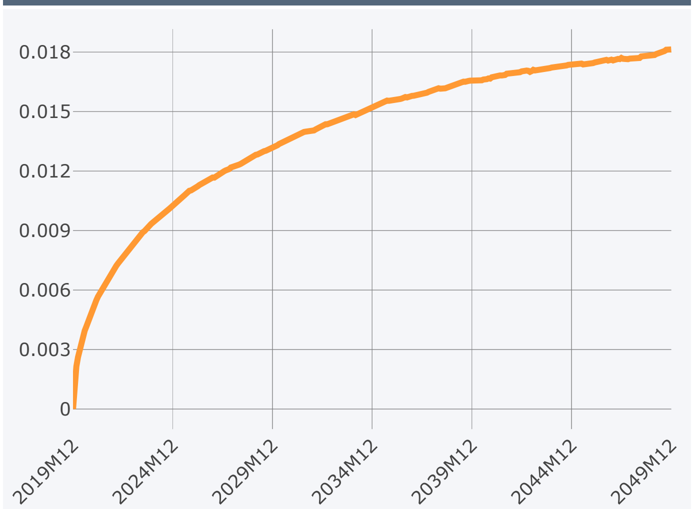
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

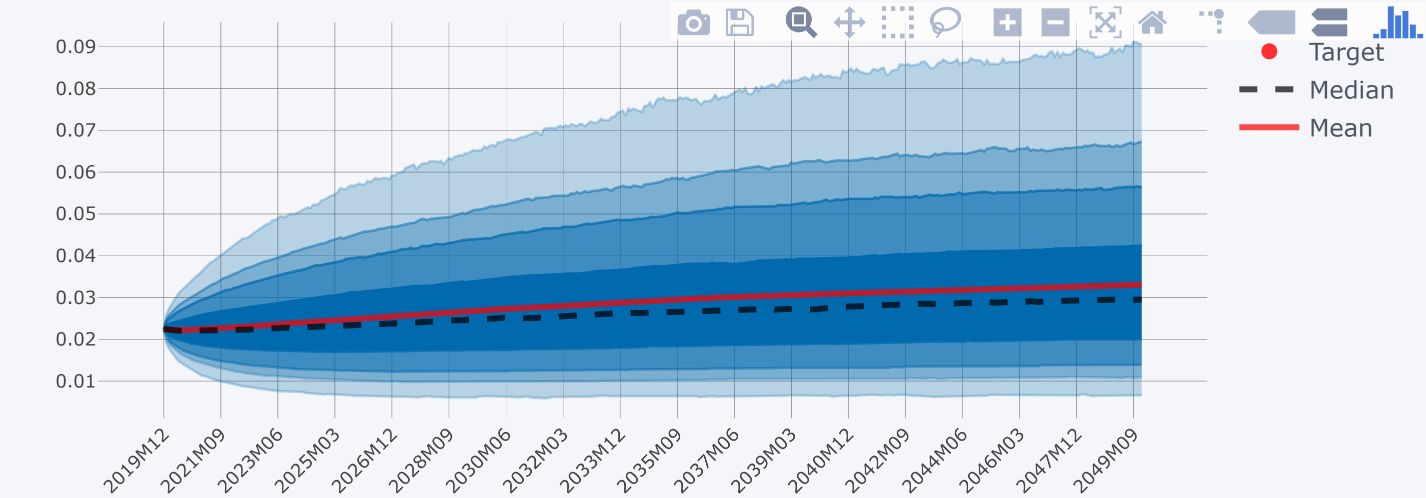
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0221	0.0268	0.0305	0.0328
std	0.0051	0.0132	0.0166	0.0181
min	0.0063	0.0009	0.0015	0.0001
1%	0.0116	0.0058	0.0061	0.006
5%	0.0143	0.0094	0.0101	0.0104
10%	0.0158	0.0119	0.0127	0.0134
25%	0.0185	0.0172	0.0186	0.0197
50%	0.0218	0.0247	0.0269	0.0293
75%	0.0254	0.0342	0.0392	0.0423
90%	0.0288	0.044	0.0528	0.0565
95%	0.0309	0.0518	0.0627	0.0673
99%	0.035	0.0664	0.0828	0.0906
max	0.0449	0.1243	0.1442	0.1655

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

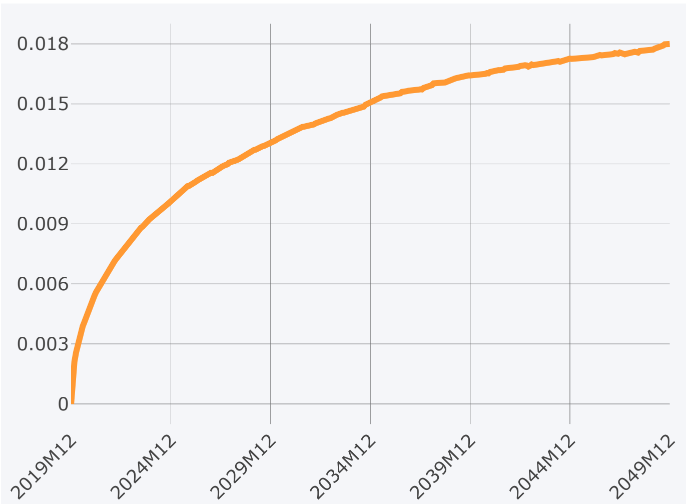
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

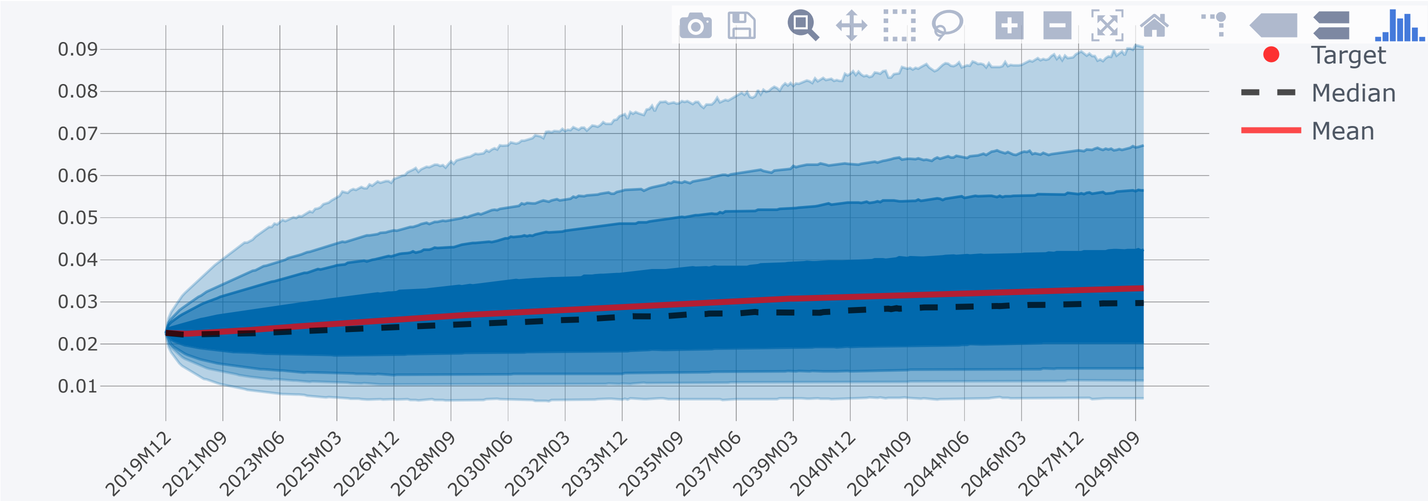
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0223	0.027	0.0308	0.0331
std	0.005	0.0131	0.0164	0.018
min	0.0069	0.0017	0.0021	0.0009
1%	0.012	0.0064	0.0066	0.0066
5%	0.0147	0.0099	0.0105	0.0109
10%	0.0162	0.0124	0.0132	0.0139
25%	0.0188	0.0175	0.0189	0.02
50%	0.022	0.0249	0.0272	0.0295
75%	0.0256	0.0344	0.0394	0.0424
90%	0.0289	0.0441	0.0528	0.0565
95%	0.0311	0.0518	0.0626	0.0673
99%	0.0351	0.0663	0.0826	0.0906
max	0.045	0.1242	0.1441	0.1653

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

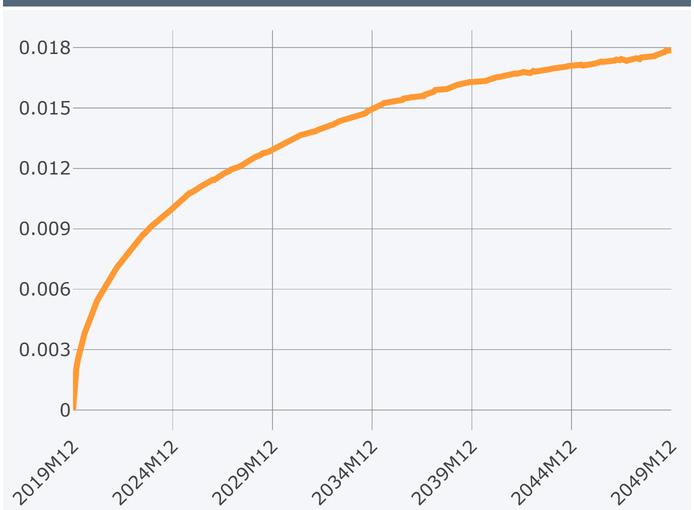
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

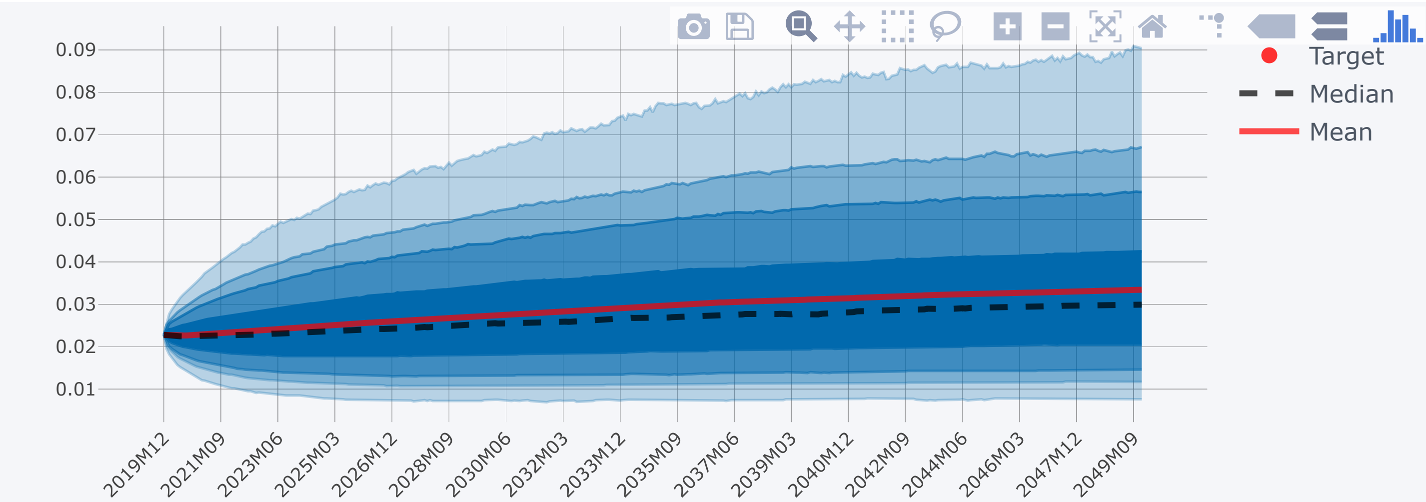
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0226	0.0273	0.031	0.0333
std	0.0049	0.0129	0.0163	0.0179
min	0.0074	0.0024	0.0027	0.0016
1%	0.0124	0.0069	0.0071	0.0071
5%	0.015	0.0104	0.0109	0.0113
10%	0.0165	0.0127	0.0135	0.0142
25%	0.0191	0.0178	0.0192	0.0203
50%	0.0222	0.0252	0.0274	0.0297
75%	0.0258	0.0345	0.0395	0.0424
90%	0.0291	0.0442	0.0528	0.0565
95%	0.0312	0.0518	0.0626	0.0672
99%	0.0351	0.0662	0.0824	0.0905
max	0.0451	0.124	0.1439	0.1651

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

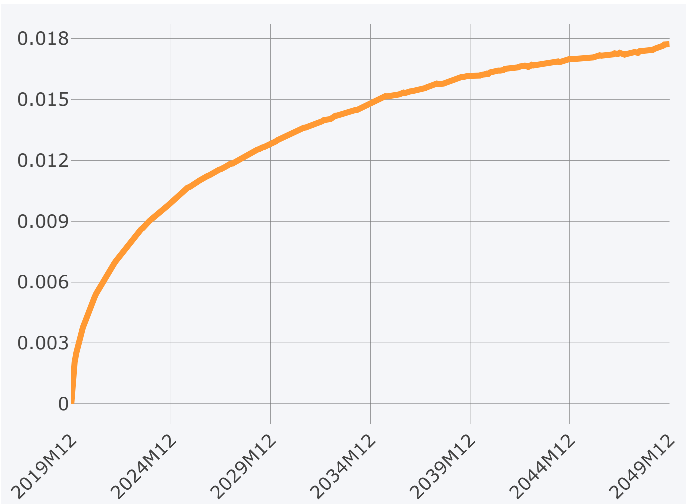
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

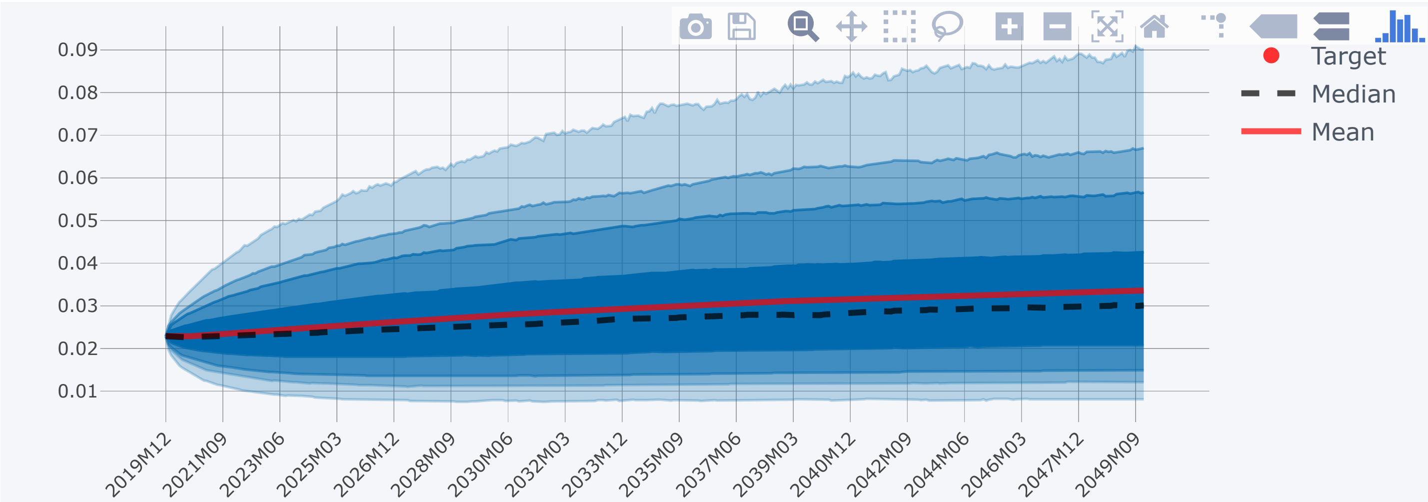
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0228	0.0275	0.0312	0.0334
std	0.0049	0.0128	0.0162	0.0177
min	0.008	0.0031	0.0033	0.0023
1%	0.0128	0.0074	0.0076	0.0076
5%	0.0153	0.0108	0.0113	0.0117
10%	0.0168	0.0131	0.0139	0.0146
25%	0.0194	0.0181	0.0195	0.0205
50%	0.0225	0.0254	0.0276	0.0299
75%	0.026	0.0347	0.0396	0.0425
90%	0.0292	0.0442	0.0529	0.0565
95%	0.0313	0.0518	0.0625	0.0671
99%	0.0352	0.0661	0.0824	0.0904
max	0.0451	0.1239	0.1438	0.1649

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

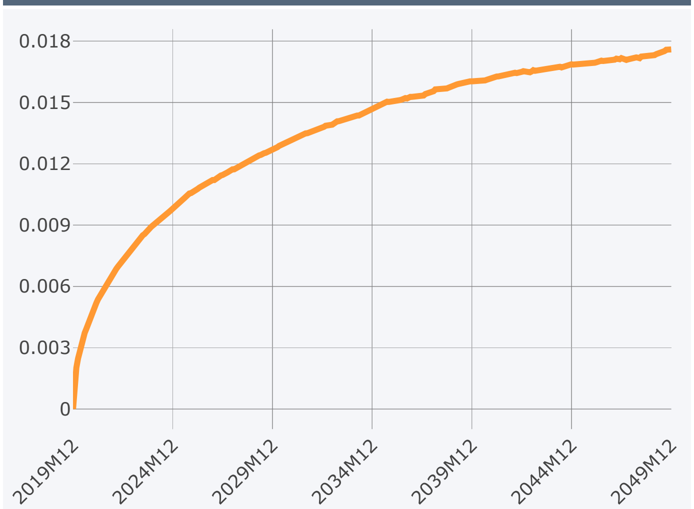
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

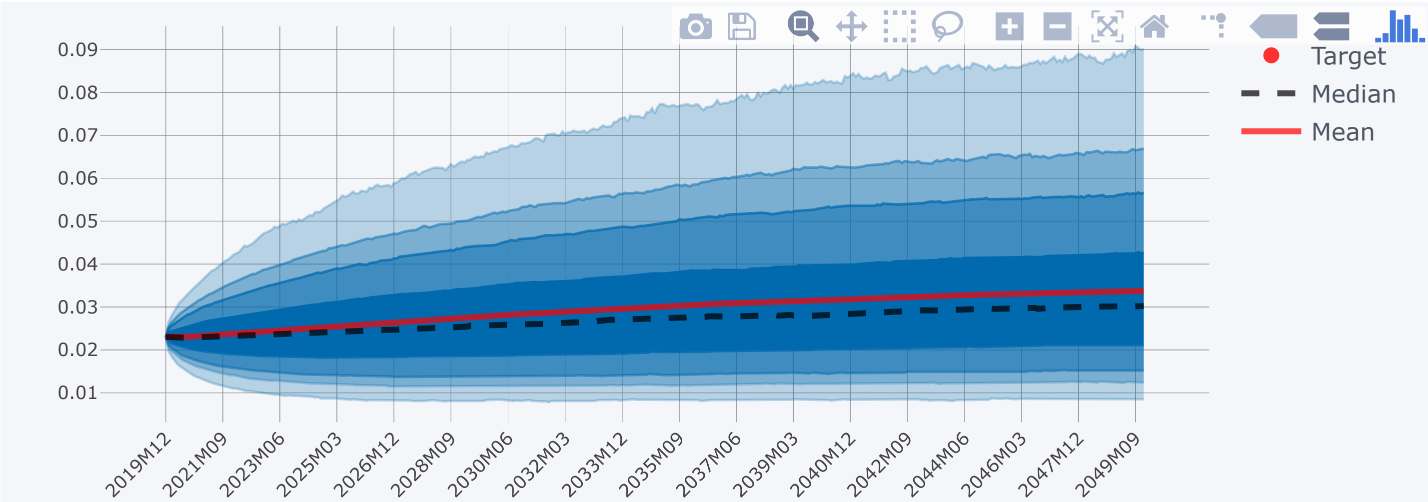
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.023	0.0277	0.0314	0.0336
std	0.0048	0.0127	0.016	0.0176
min	0.0085	0.0038	0.0039	0.003
1%	0.0132	0.0079	0.008	0.0081
5%	0.0157	0.0112	0.0117	0.0121
10%	0.0171	0.0135	0.0142	0.0149
25%	0.0196	0.0184	0.0198	0.0208
50%	0.0227	0.0256	0.0278	0.0301
75%	0.0261	0.0348	0.0397	0.0426
90%	0.0293	0.0442	0.0529	0.0566
95%	0.0314	0.0518	0.0626	0.067
99%	0.0352	0.0661	0.0822	0.0902
max	0.0451	0.1238	0.1437	0.1647

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

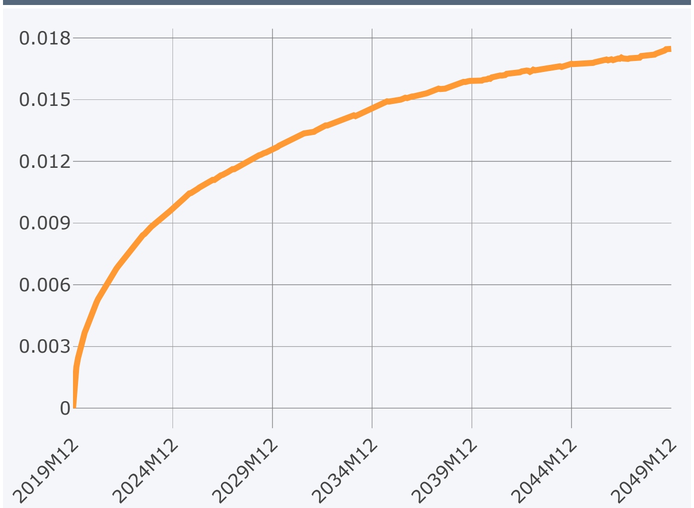
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0232	0.0279	0.0315	0.0338
std	0.0047	0.0126	0.0159	0.0175
min	0.0089	0.0044	0.0044	0.0036
1%	0.0135	0.0083	0.0085	0.0085
5%	0.016	0.0116	0.0121	0.0124
10%	0.0174	0.0138	0.0146	0.0152
25%	0.0198	0.0187	0.0201	0.0211
50%	0.0229	0.0258	0.028	0.0302
75%	0.0263	0.0349	0.0398	0.0426
90%	0.0295	0.0443	0.0529	0.0566
95%	0.0315	0.0518	0.0625	0.0669
99%	0.0353	0.066	0.0821	0.0901
max	0.0452	0.1237	0.1435	0.1645

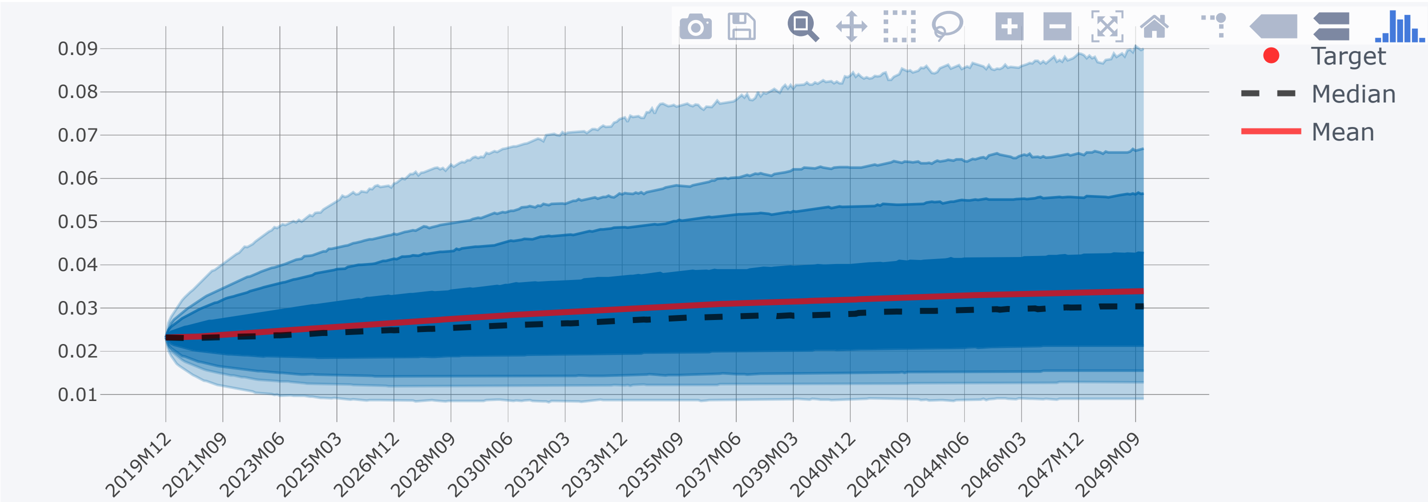
Cross Sectional Volatility Over Time



US Treasury 25 Year Yield - Coupon
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

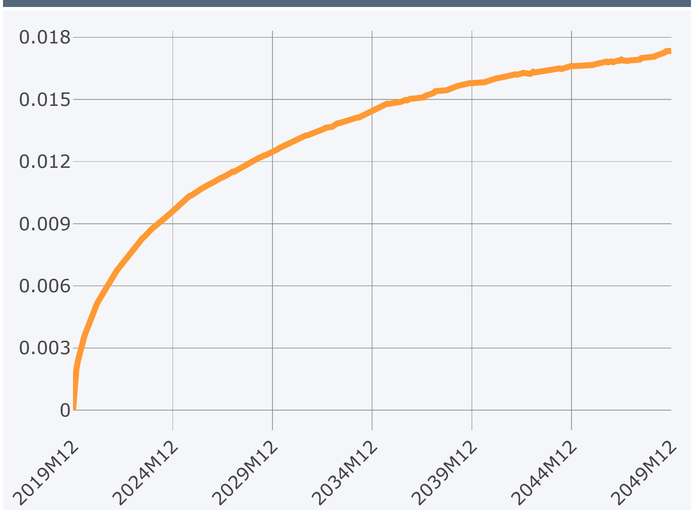
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0234	0.0281	0.0317	0.0339
std	0.0047	0.0125	0.0158	0.0173
min	0.0094	0.0049	0.0049	0.0042
1%	0.0138	0.0087	0.0089	0.009
5%	0.0163	0.0119	0.0125	0.0128
10%	0.0176	0.0141	0.0149	0.0155
25%	0.0201	0.0189	0.0203	0.0213
50%	0.0231	0.026	0.0281	0.0304
75%	0.0264	0.035	0.0399	0.0427
90%	0.0296	0.0443	0.0529	0.0565
95%	0.0316	0.0518	0.0625	0.0669
99%	0.0354	0.066	0.0819	0.09
max	0.0452	0.1236	0.1434	0.1644

Cross Sectional Volatility Over Time



US Treasury 26 Year Yield - Coupon

Conning | Risk Solutions

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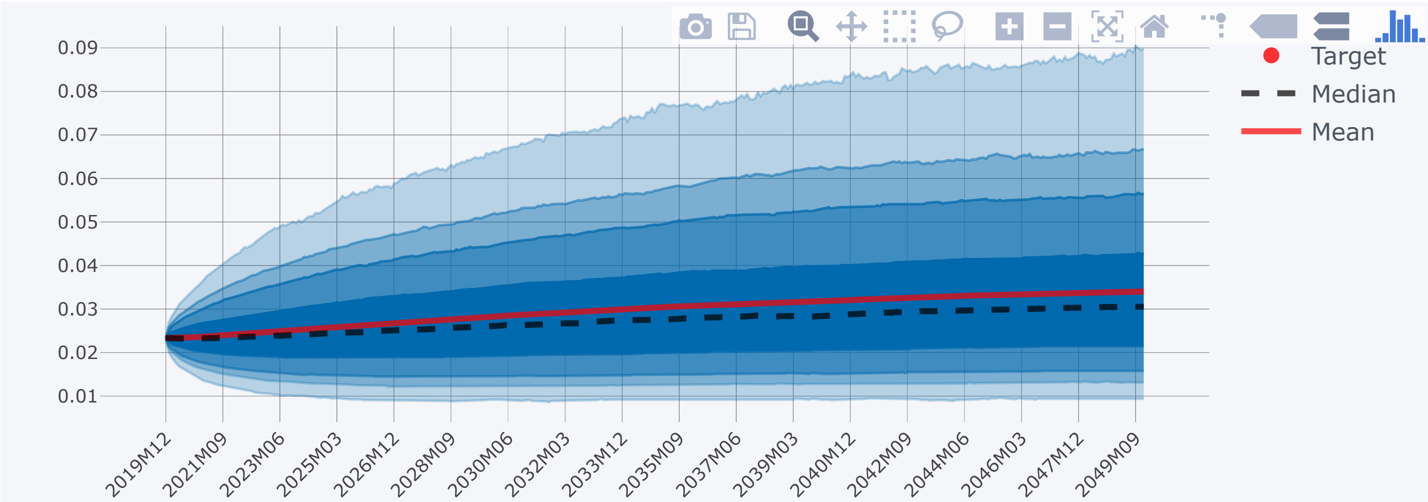
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

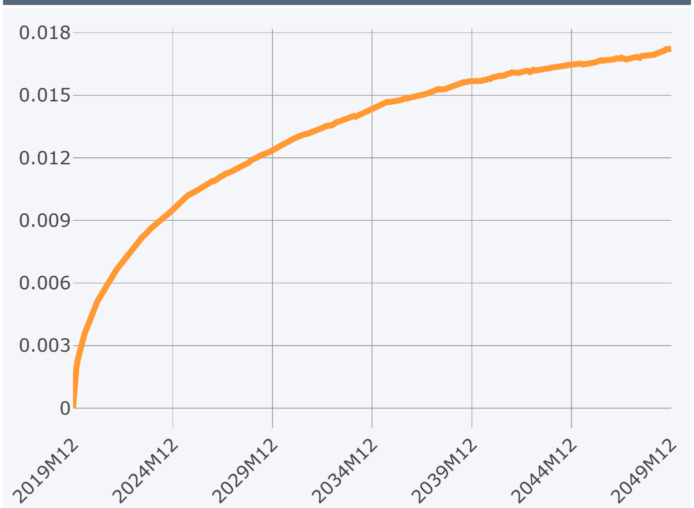
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0236	0.0283	0.0318	0.034
std	0.0046	0.0124	0.0157	0.0172
min	0.0098	0.0055	0.0054	0.0048
1%	0.0141	0.0091	0.0093	0.0094
5%	0.0165	0.0123	0.0128	0.0131
10%	0.0179	0.0144	0.0152	0.0158
25%	0.0203	0.0192	0.0206	0.0215
50%	0.0233	0.0262	0.0283	0.0306
75%	0.0266	0.0351	0.04	0.0428
90%	0.0297	0.0443	0.0529	0.0565
95%	0.0317	0.0518	0.0624	0.0668
99%	0.0354	0.0659	0.0818	0.0898
max	0.0452	0.1234	0.1433	0.1642

Cross Sectional Volatility Over Time



US Treasury 27 Year Yield - Coupon
Conning | Risk Solutions

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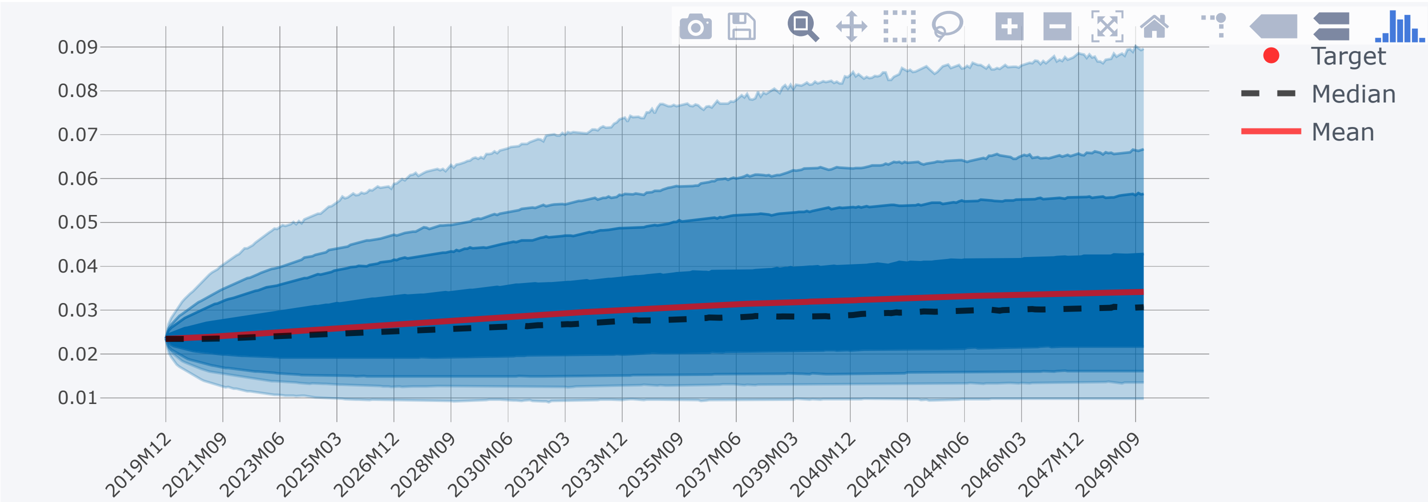
Validation Report

Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

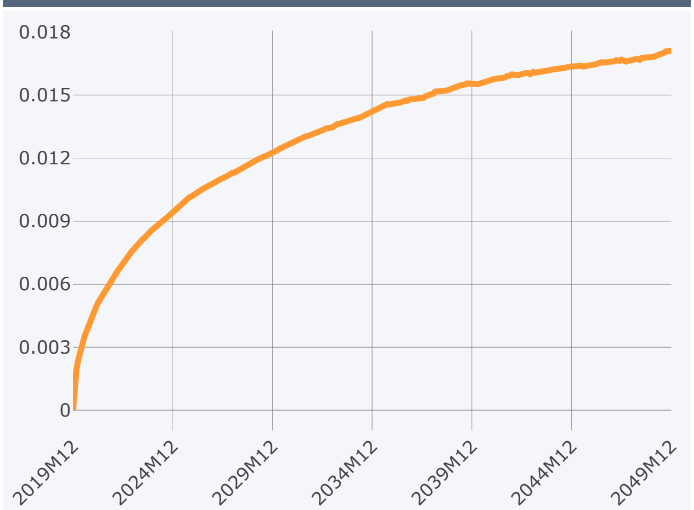
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0238	0.0284	0.032	0.0342
std	0.0046	0.0123	0.0156	0.0171
min	0.0102	0.006	0.0058	0.0053
1%	0.0144	0.0095	0.0097	0.0098
5%	0.0168	0.0126	0.0131	0.0135
10%	0.0181	0.0147	0.0155	0.0161
25%	0.0205	0.0194	0.0208	0.0217
50%	0.0234	0.0263	0.0284	0.0307
75%	0.0267	0.0352	0.04	0.0428
90%	0.0298	0.0443	0.0529	0.0565
95%	0.0318	0.0517	0.0624	0.0667
99%	0.0355	0.0657	0.0817	0.0896
max	0.0452	0.1233	0.1431	0.164

Cross Sectional Volatility Over Time



US Treasury 28 Year Yield - Coupon 2019 Q4
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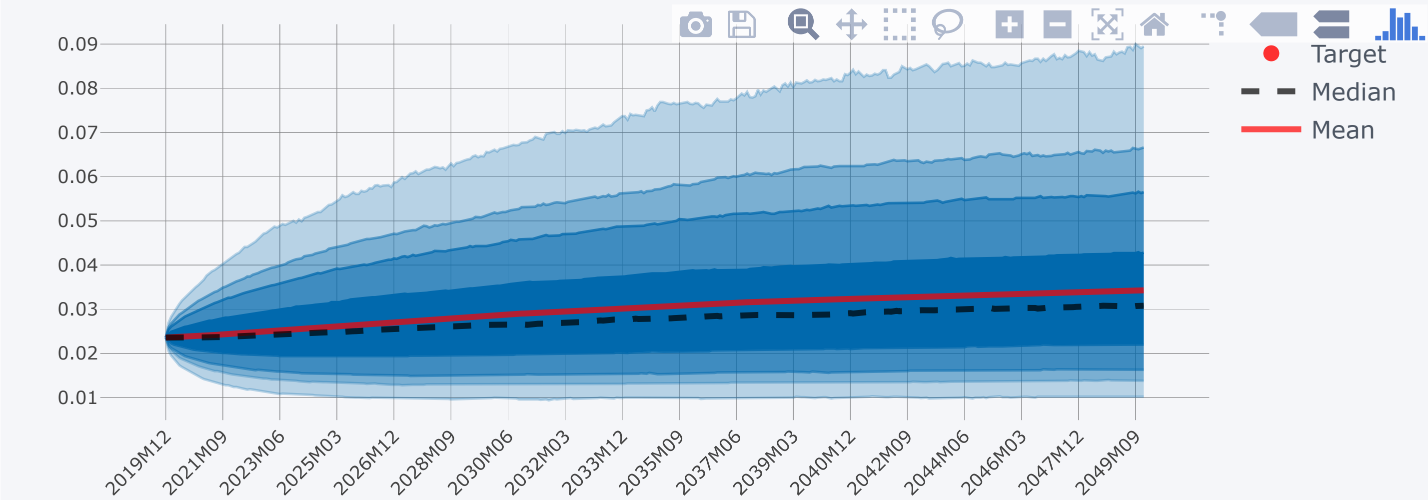
Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

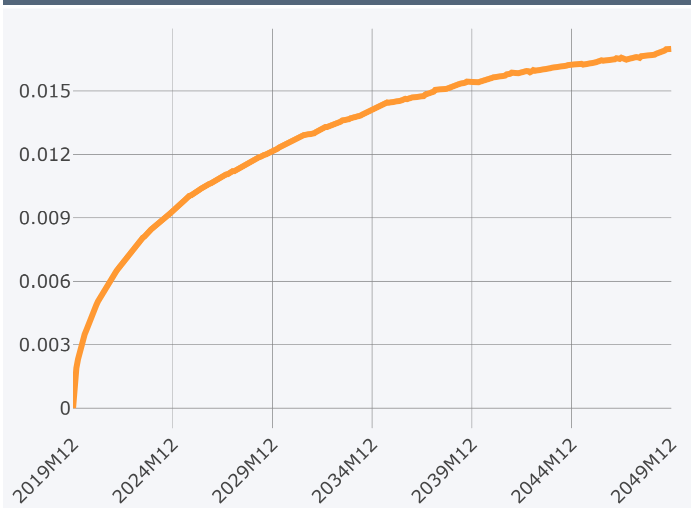
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

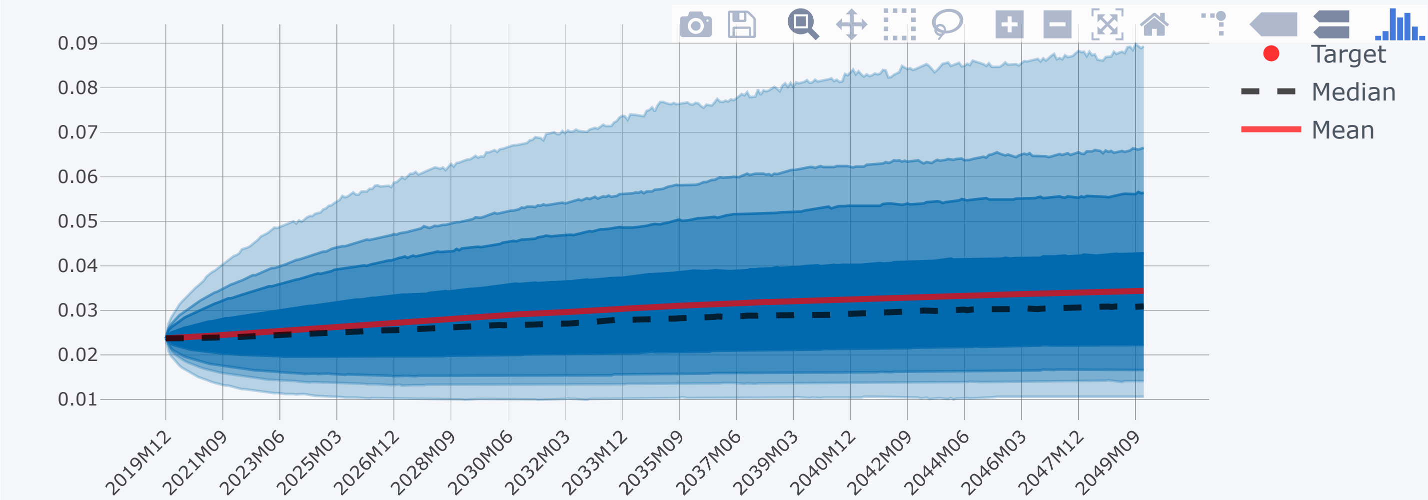
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0239	0.0286	0.0321	0.0343
std	0.0045	0.0121	0.0154	0.017
min	0.0106	0.0064	0.0063	0.0058
1%	0.0148	0.0099	0.01	0.0102
5%	0.0171	0.013	0.0134	0.0138
10%	0.0184	0.015	0.0158	0.0163
25%	0.0207	0.0196	0.021	0.022
50%	0.0236	0.0265	0.0286	0.0308
75%	0.0268	0.0352	0.04	0.0428
90%	0.0299	0.0443	0.0528	0.0565
95%	0.0319	0.0517	0.0623	0.0666
99%	0.0355	0.0657	0.0816	0.0895
max	0.0452	0.1232	0.143	0.1639

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

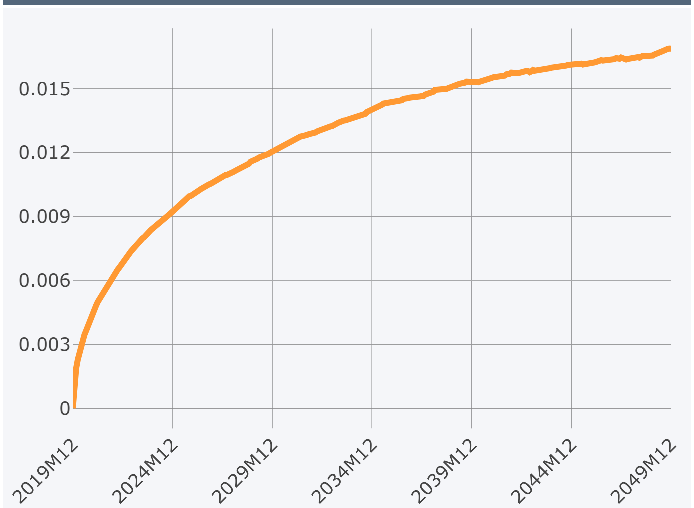
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

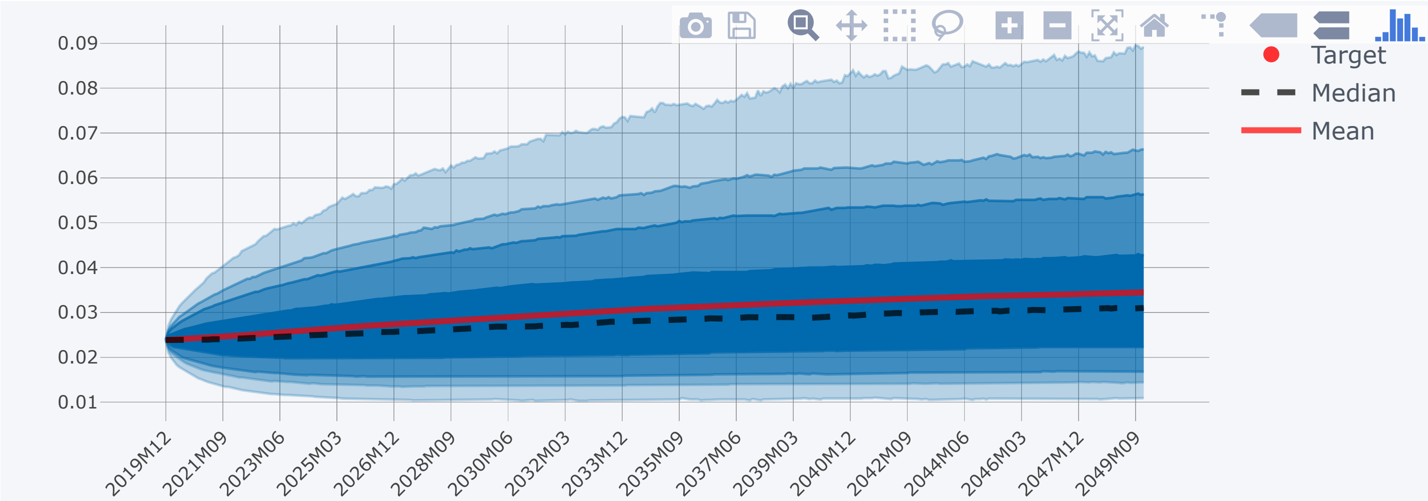
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0241	0.0287	0.0322	0.0344
std	0.0045	0.012	0.0153	0.0169
min	0.011	0.0068	0.0067	0.0063
1%	0.015	0.0102	0.0104	0.0106
5%	0.0173	0.0133	0.0137	0.0141
10%	0.0186	0.0153	0.016	0.0166
25%	0.0209	0.0198	0.0212	0.0222
50%	0.0238	0.0266	0.0287	0.0309
75%	0.027	0.0353	0.0401	0.0428
90%	0.03	0.0443	0.0528	0.0564
95%	0.0319	0.0517	0.0622	0.0665
99%	0.0356	0.0656	0.0814	0.0893
max	0.0452	0.1231	0.1429	0.1638

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

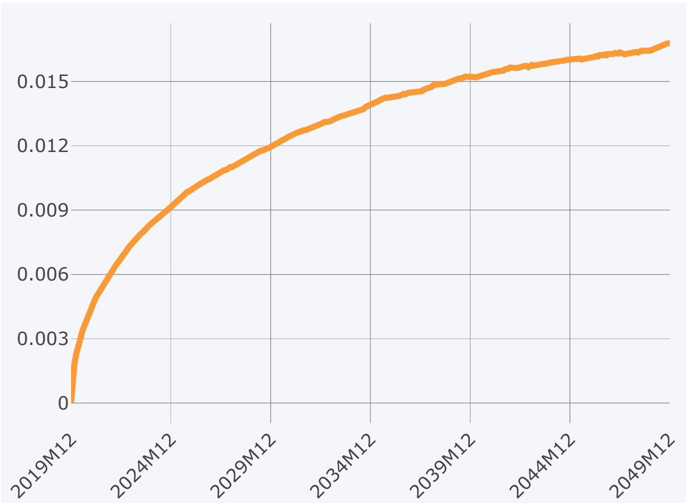
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

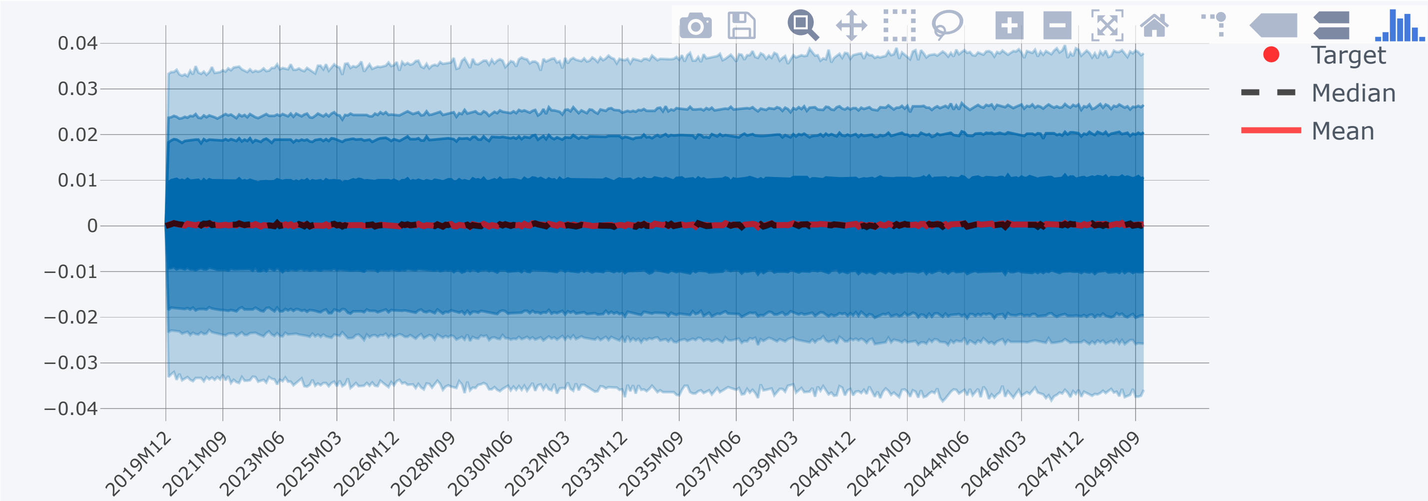
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0242	0.0288	0.0323	0.0345
std	0.0044	0.012	0.0152	0.0168
min	0.0113	0.0072	0.0071	0.0067
1%	0.0153	0.0106	0.0107	0.0109
5%	0.0175	0.0136	0.014	0.0144
10%	0.0188	0.0155	0.0163	0.0168
25%	0.0211	0.02	0.0214	0.0223
50%	0.0239	0.0268	0.0288	0.031
75%	0.0271	0.0354	0.0401	0.0428
90%	0.0301	0.0443	0.0527	0.0564
95%	0.032	0.0516	0.0621	0.0664
99%	0.0356	0.0655	0.0813	0.0892
max	0.0452	0.1229	0.1428	0.1636

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

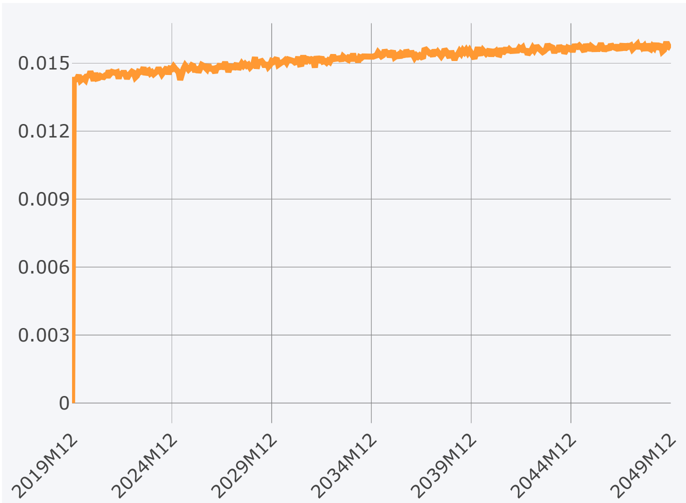
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

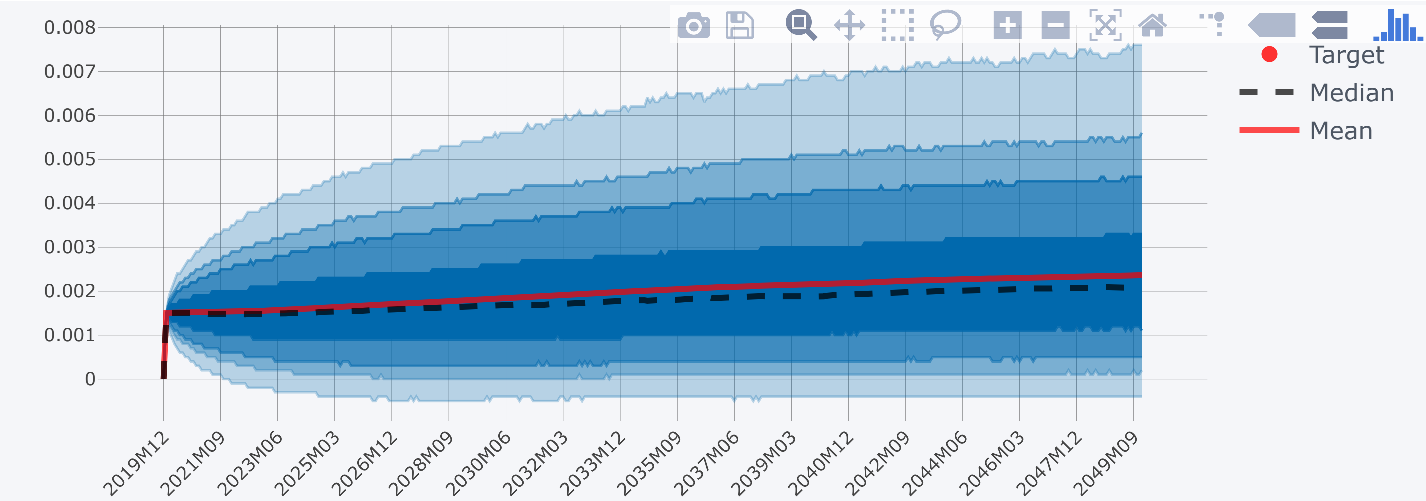
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0003	0.0002	0.0003	0.0004
std	0.0145	0.0151	0.0153	0.0157
min	-0.06	-0.0568	-0.0693	-0.0605
1%	-0.0334	-0.0358	-0.0352	-0.0359
5%	-0.0238	-0.0245	-0.0249	-0.0258
10%	-0.0182	-0.0188	-0.0192	-0.0196
25%	-0.0094	-0.0097	-0.0099	-0.0101
50%	0.0005	0.0001	0.0003	0.0003
75%	0.0101	0.0101	0.0103	0.0106
90%	0.0189	0.0195	0.0198	0.0205
95%	0.0237	0.0247	0.0255	0.0265
99%	0.0336	0.0364	0.0374	0.0378
max	0.0573	0.0689	0.0582	0.0658

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

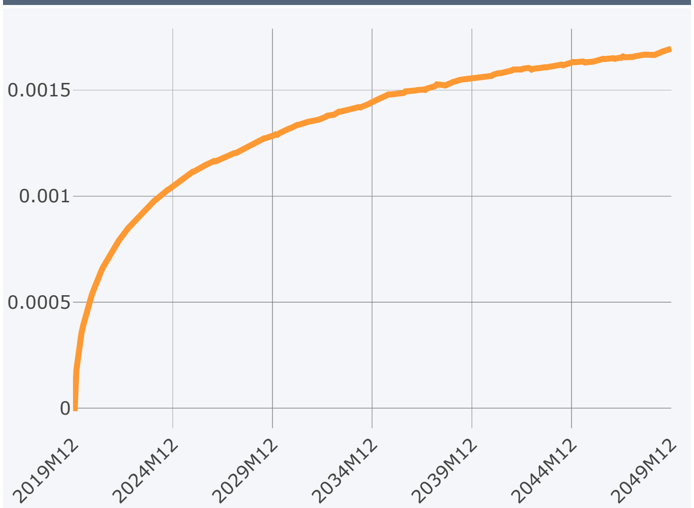
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

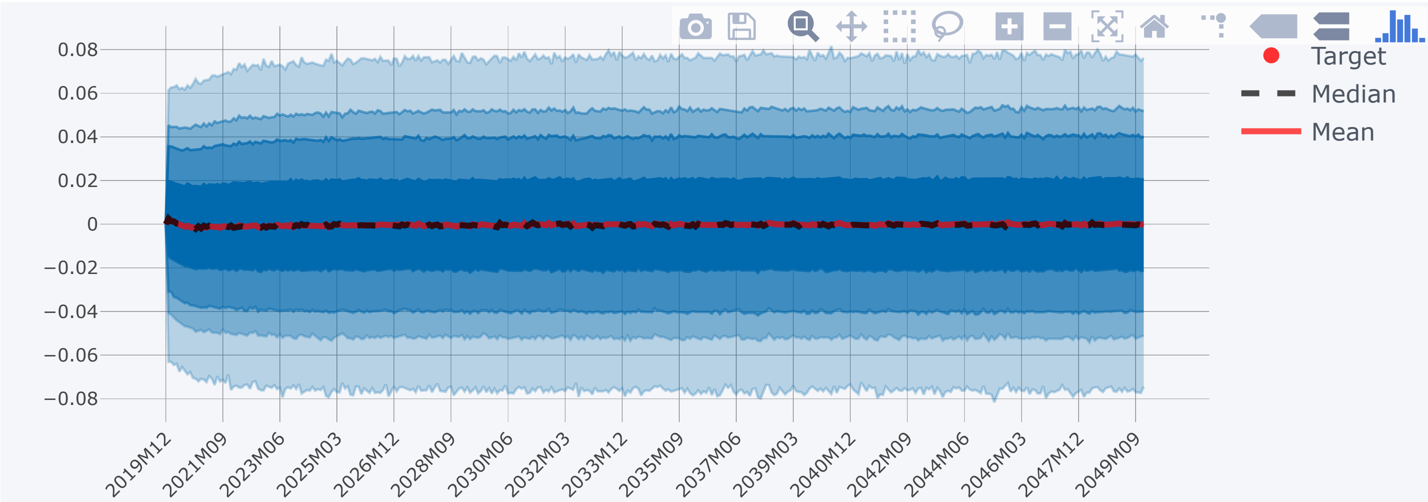
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0015	0.0018	0.0022	0.0024
std	0.0005	0.0013	0.0016	0.0017
min	-0.0003	-0.0014	-0.001	-0.0015
1%	0.0003	-0.0005	-0.0004	-0.0004
5%	0.0006	0	0.0001	0.0002
10%	0.0008	0.0003	0.0004	0.0005
25%	0.0011	0.0009	0.001	0.0011
50%	0.0015	0.0017	0.0019	0.0021
75%	0.0019	0.0026	0.003	0.0033
90%	0.0022	0.0035	0.0043	0.0046
95%	0.0025	0.0042	0.0051	0.0056
99%	0.0029	0.0055	0.0069	0.0076
max	0.004	0.0104	0.0125	0.0138

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

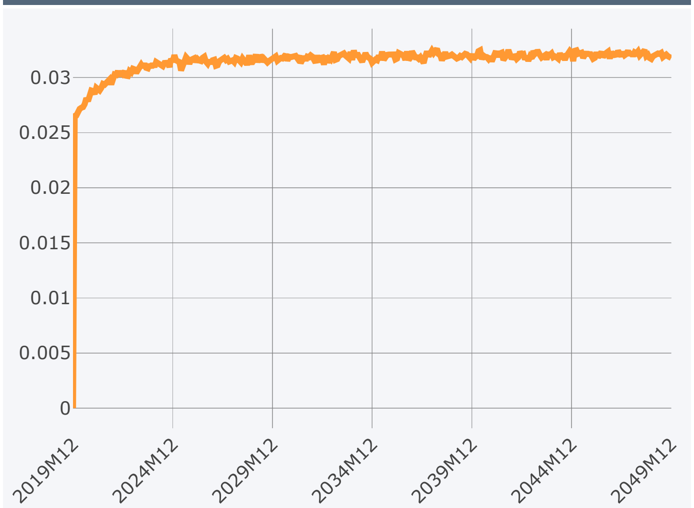
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

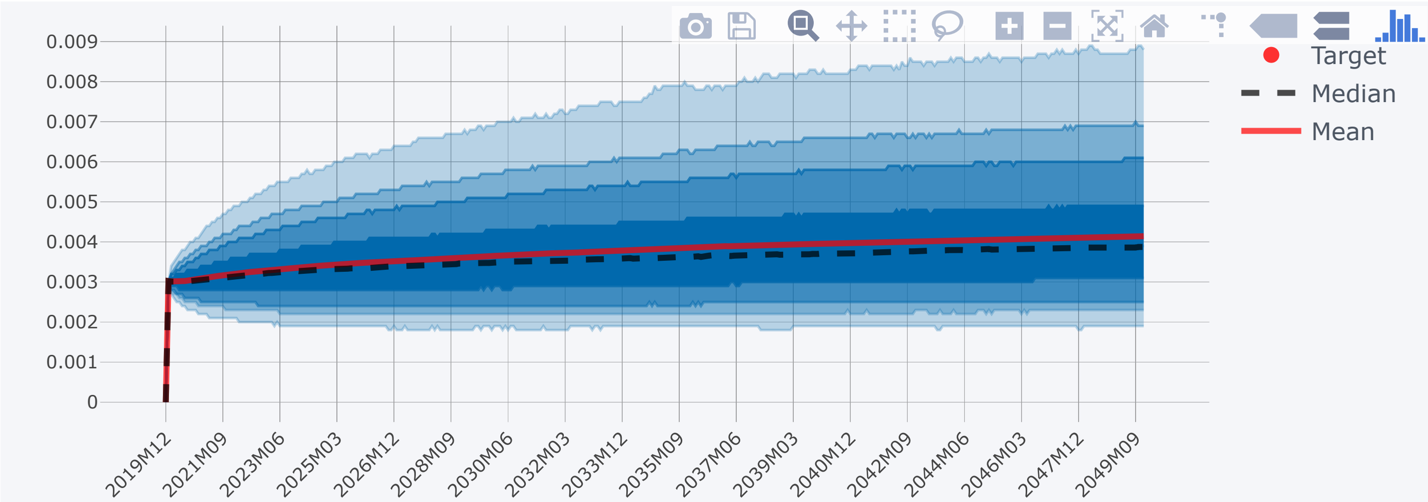
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	-0.0014	-0.0005	0	-0.0001
std	0.0288	0.0317	0.0321	0.0318
min	-0.1329	-0.1647	-0.1478	-0.14
1%	-0.072	-0.0776	-0.0764	-0.0744
5%	-0.049	-0.052	-0.0525	-0.0512
10%	-0.038	-0.0393	-0.0405	-0.0399
25%	-0.0203	-0.0212	-0.021	-0.0211
50%	-0.001	-0.0006	-0.0002	-0.0008
75%	0.0176	0.0197	0.021	0.0207
90%	0.0347	0.0395	0.0405	0.0402
95%	0.045	0.0526	0.0523	0.0518
99%	0.0647	0.076	0.0786	0.0762
max	0.1197	0.1357	0.1328	0.1938

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

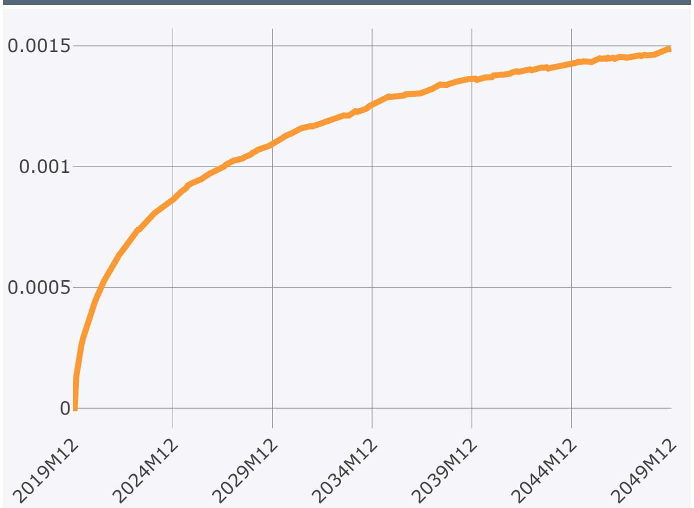
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

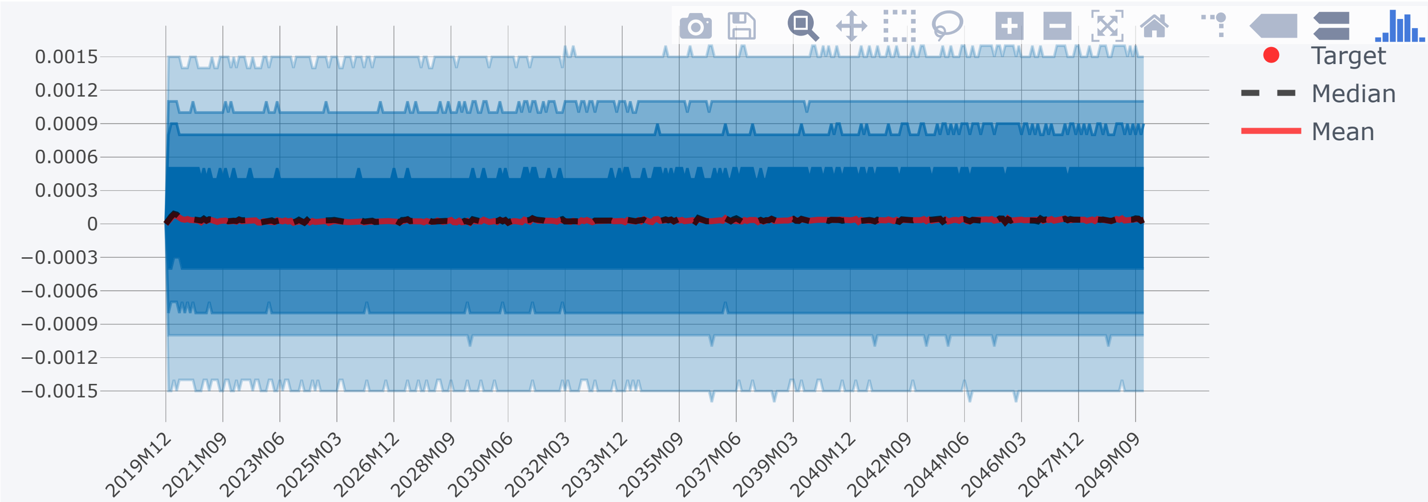
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0031	0.0036	0.004	0.0041
std	0.0004	0.0011	0.0014	0.0015
min	0.0018	0.0014	0.0013	0.0014
1%	0.0022	0.0018	0.0019	0.0019
5%	0.0024	0.0022	0.0022	0.0023
10%	0.0026	0.0024	0.0025	0.0025
25%	0.0028	0.0028	0.003	0.0031
50%	0.003	0.0035	0.0037	0.0039
75%	0.0033	0.0043	0.0047	0.0049
90%	0.0036	0.0051	0.0058	0.0061
95%	0.0038	0.0057	0.0066	0.0069
99%	0.0041	0.0069	0.0082	0.0088
max	0.0051	0.0114	0.0136	0.0144

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

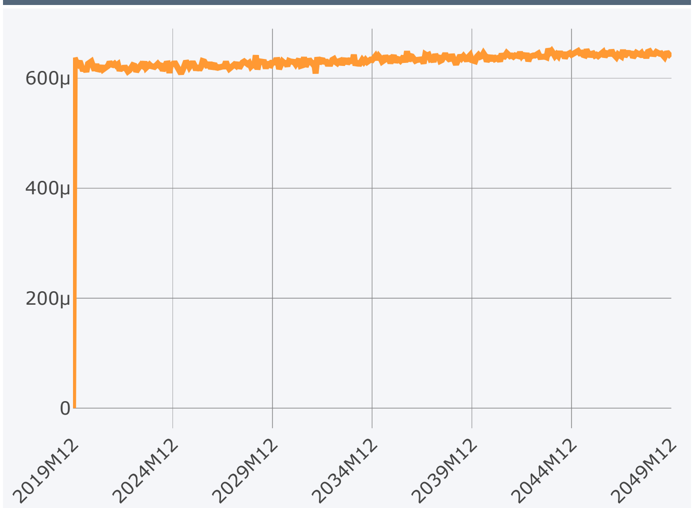
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

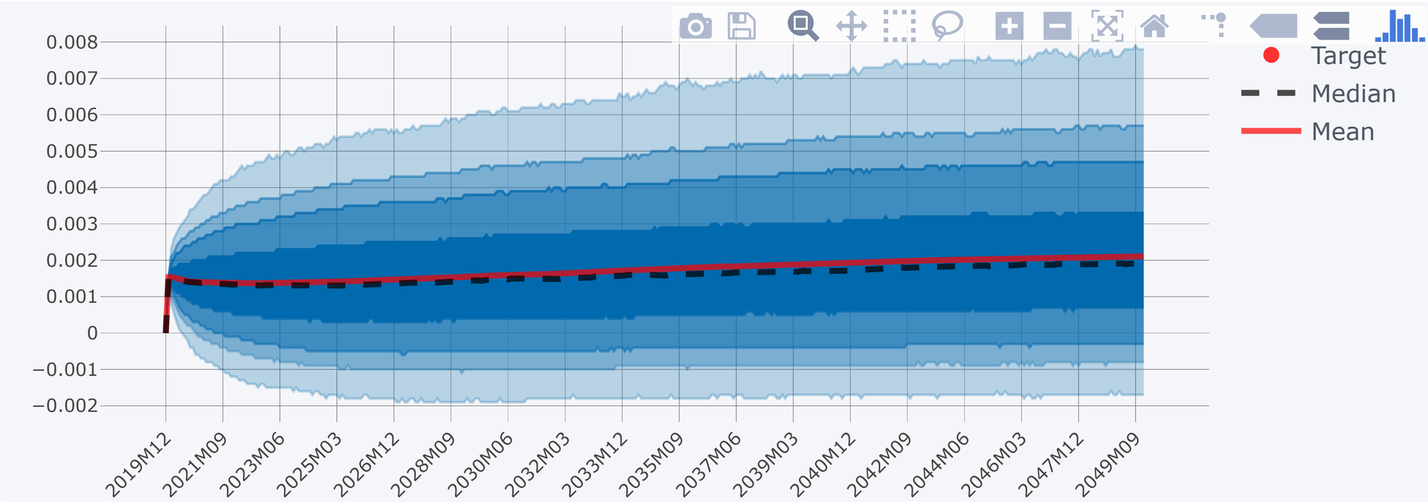
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0	0	0	0
std	0.0006	0.0006	0.0006	0.0006
min	-0.0032	-0.003	-0.003	-0.0028
1%	-0.0015	-0.0015	-0.0014	-0.0015
5%	-0.001	-0.001	-0.001	-0.001
10%	-0.0008	-0.0008	-0.0008	-0.0008
25%	-0.0004	-0.0004	-0.0004	-0.0004
50%	0	0	0	0
75%	0.0005	0.0004	0.0005	0.0005
90%	0.0008	0.0008	0.0008	0.0009
95%	0.001	0.001	0.0011	0.0011
99%	0.0014	0.0015	0.0015	0.0015
max	0.0023	0.0024	0.0026	0.0025

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

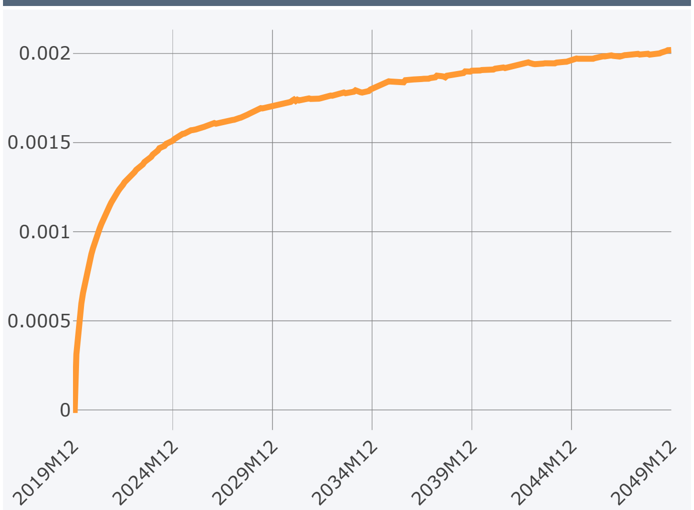
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

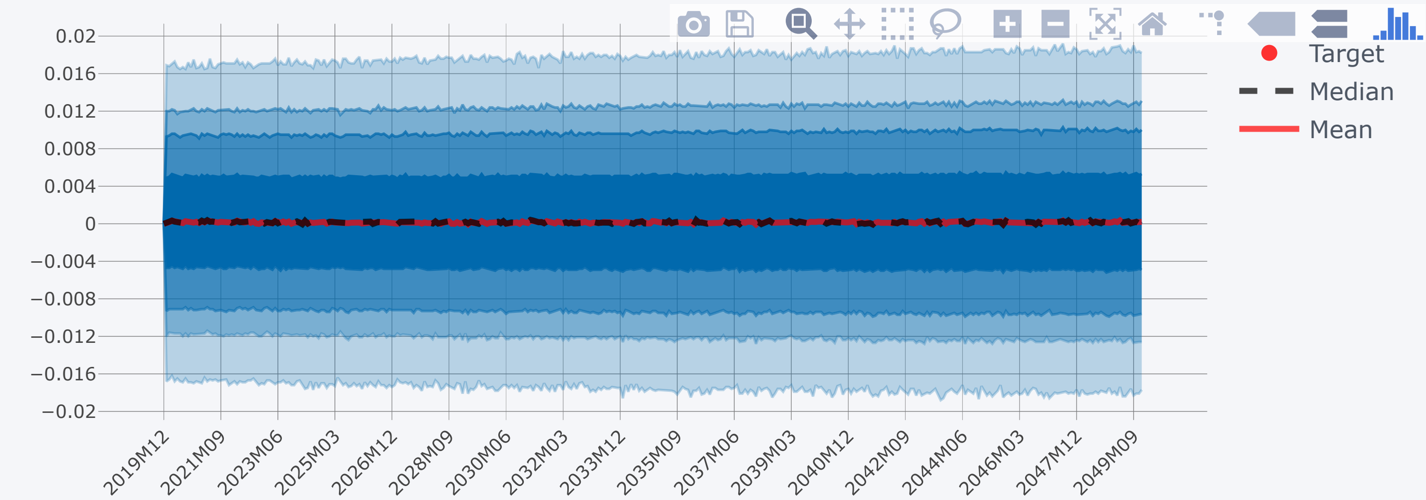
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0014	0.0016	0.0019	0.0021
std	0.0009	0.0017	0.0019	0.002
min	-0.0018	-0.0038	-0.0031	-0.0036
1%	-0.0006	-0.0019	-0.0017	-0.0017
5%	-0.0001	-0.001	-0.0009	-0.0008
10%	0.0003	-0.0005	-0.0004	-0.0003
25%	0.0008	0.0004	0.0006	0.0007
50%	0.0014	0.0015	0.0017	0.0019
75%	0.002	0.0026	0.003	0.0033
90%	0.0026	0.0038	0.0044	0.0047
95%	0.0029	0.0045	0.0054	0.0057
99%	0.0036	0.006	0.0071	0.0078
max	0.0051	0.0111	0.0118	0.0135

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

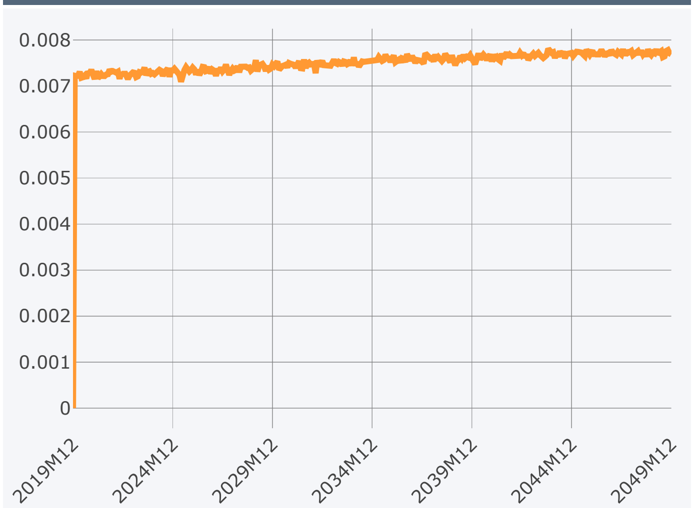
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

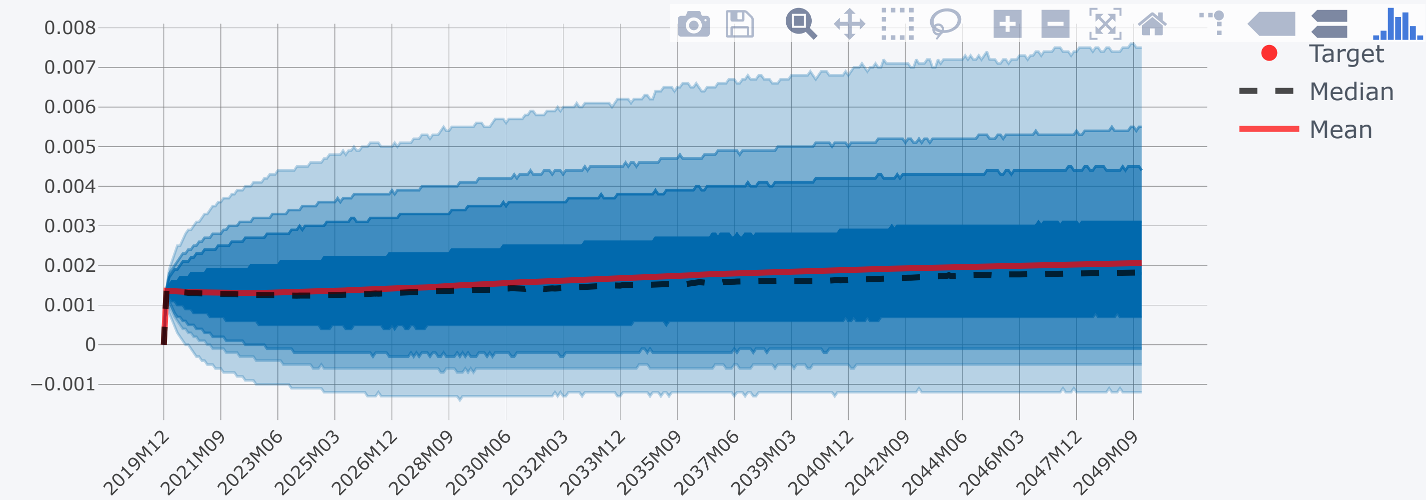
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0002	0.0001	0.0002	0.0002
std	0.0072	0.0075	0.0076	0.0077
min	-0.0313	-0.0272	-0.0369	-0.0313
1%	-0.0168	-0.0175	-0.0172	-0.0177
5%	-0.0118	-0.0123	-0.0121	-0.0126
10%	-0.0092	-0.0093	-0.0094	-0.0096
25%	-0.0046	-0.0048	-0.0048	-0.0049
50%	0.0002	0.0001	0.0002	0.0002
75%	0.0051	0.0051	0.0052	0.0053
90%	0.0094	0.0096	0.0098	0.01
95%	0.012	0.0124	0.0127	0.0131
99%	0.0166	0.0179	0.0183	0.0182
max	0.0298	0.0322	0.0285	0.0325

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

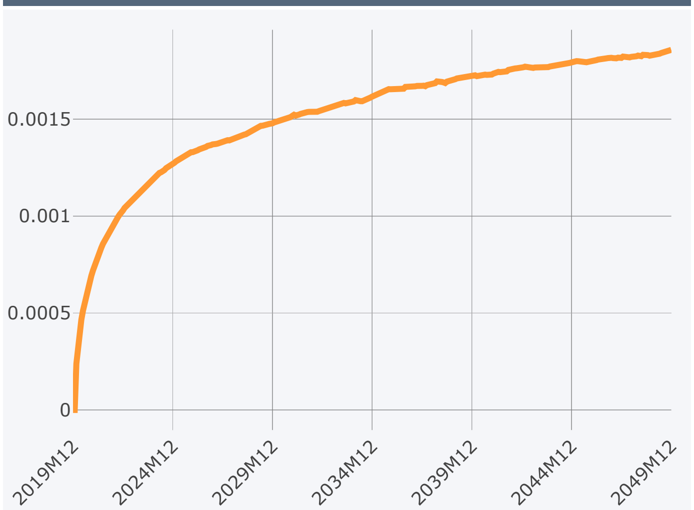
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

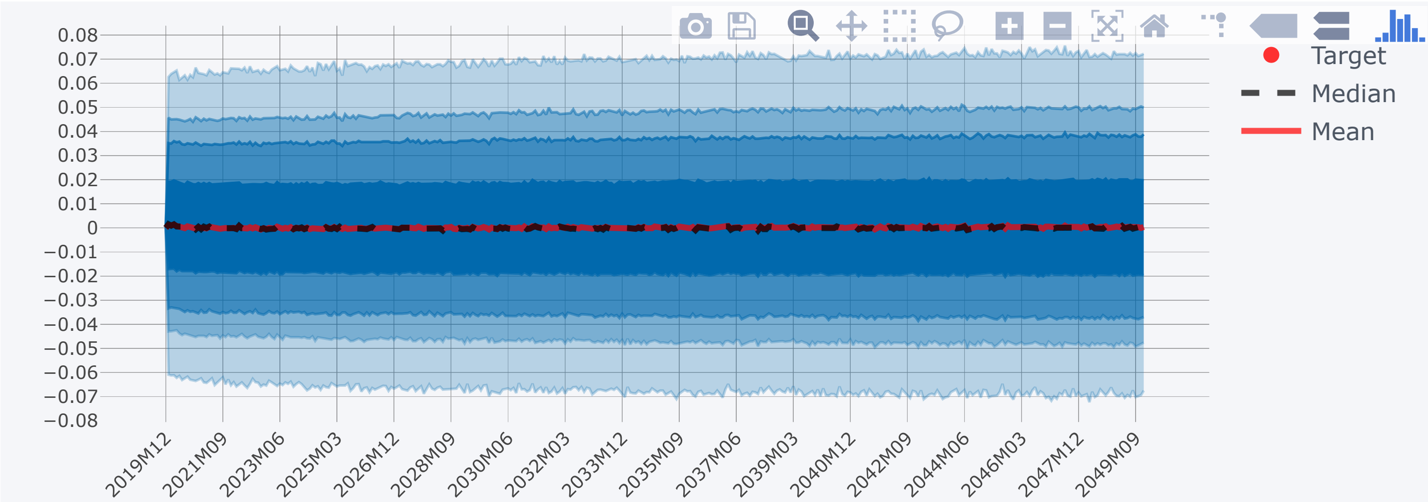
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0013	0.0015	0.0019	0.0021
std	0.0007	0.0015	0.0017	0.0019
min	-0.0011	-0.0026	-0.0021	-0.0027
1%	-0.0003	-0.0013	-0.0012	-0.0012
5%	0.0002	-0.0006	-0.0005	-0.0005
10%	0.0004	-0.0002	-0.0001	-0.0001
25%	0.0008	0.0005	0.0006	0.0007
50%	0.0013	0.0014	0.0016	0.0018
75%	0.0018	0.0024	0.0028	0.0031
90%	0.0023	0.0035	0.0042	0.0044
95%	0.0025	0.0042	0.0051	0.0055
99%	0.0031	0.0055	0.0067	0.0075
max	0.0046	0.01	0.0123	0.0139

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

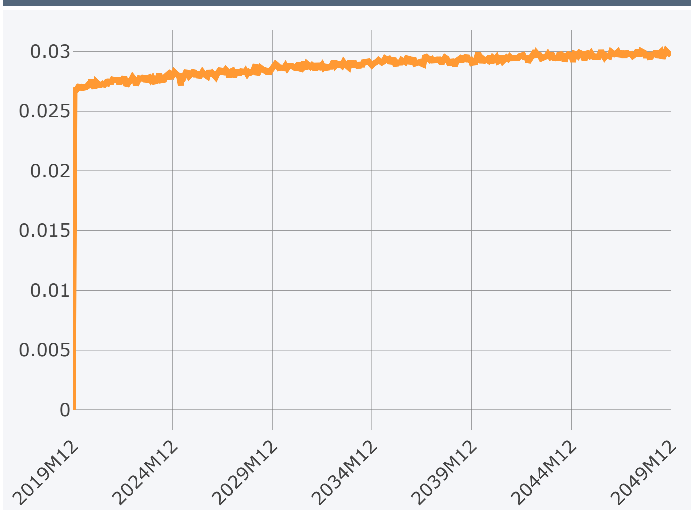
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

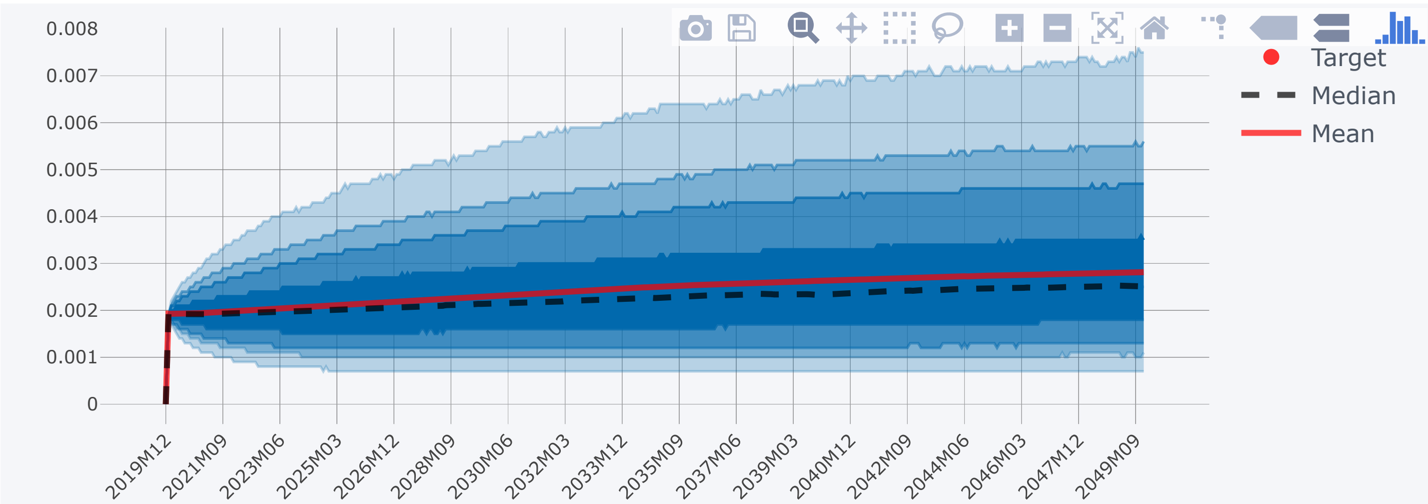
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0002	0.0001	0.0003	0.0004
std	0.0274	0.0286	0.0291	0.0297
min	-0.0971	-0.115	-0.1158	-0.1127
1%	-0.063	-0.0678	-0.0671	-0.0675
5%	-0.0448	-0.0456	-0.0473	-0.0476
10%	-0.0355	-0.0353	-0.0365	-0.037
25%	-0.0181	-0.0189	-0.0189	-0.0196
50%	0.0004	-0.0001	0	-0.0003
75%	0.0186	0.0187	0.0195	0.0197
90%	0.035	0.0367	0.0371	0.0388
95%	0.0452	0.0476	0.0492	0.0499
99%	0.0643	0.0694	0.0713	0.0722
max	0.1022	0.1309	0.106	0.1137

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

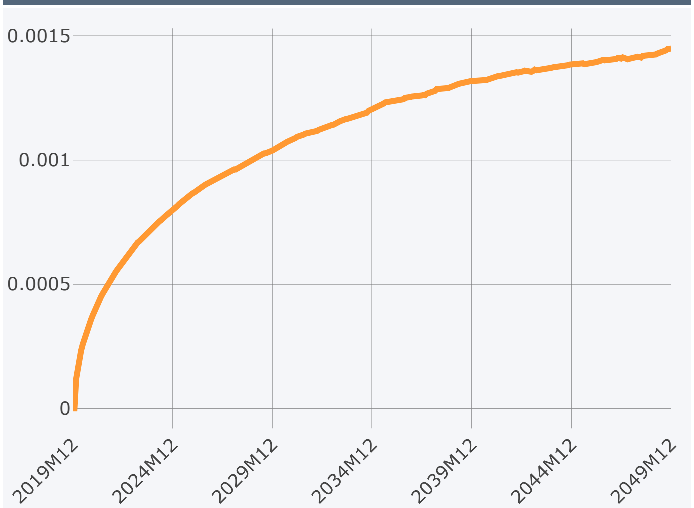
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

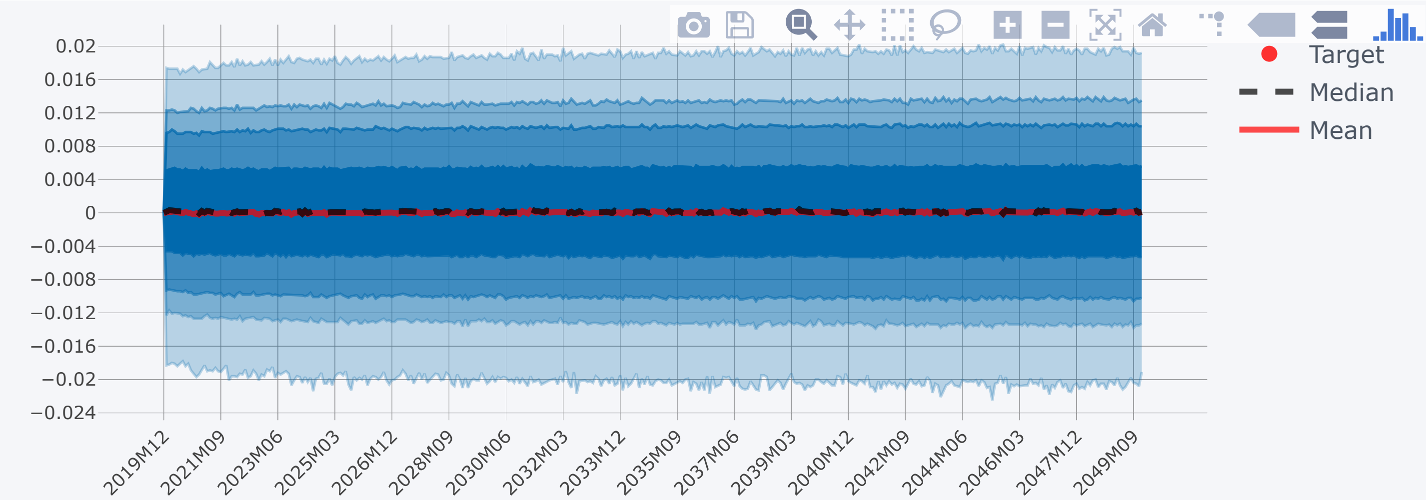
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0019	0.0023	0.0026	0.0028
std	0.0004	0.001	0.0013	0.0014
min	0.0009	0.0003	0.0003	0.0003
1%	0.0012	0.0007	0.0007	0.0007
5%	0.0014	0.001	0.001	0.0011
10%	0.0015	0.0012	0.0012	0.0013
25%	0.0017	0.0016	0.0017	0.0018
50%	0.0019	0.0022	0.0023	0.0025
75%	0.0022	0.0029	0.0033	0.0035
90%	0.0024	0.0037	0.0044	0.0047
95%	0.0026	0.0043	0.0052	0.0056
99%	0.0029	0.0055	0.0069	0.0075
max	0.0036	0.0104	0.0125	0.0134

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

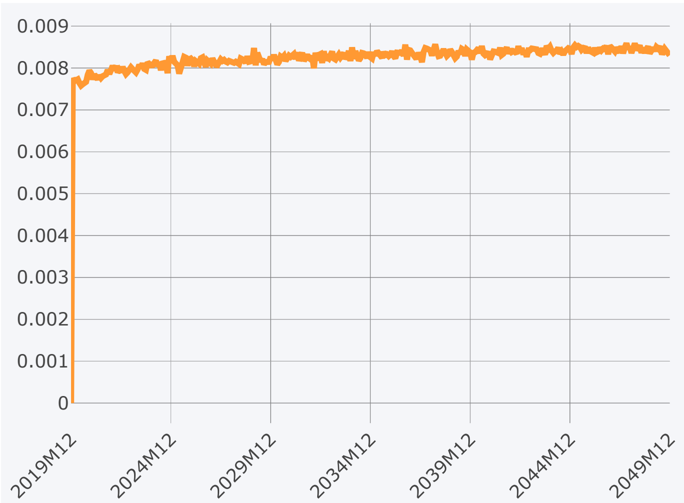
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

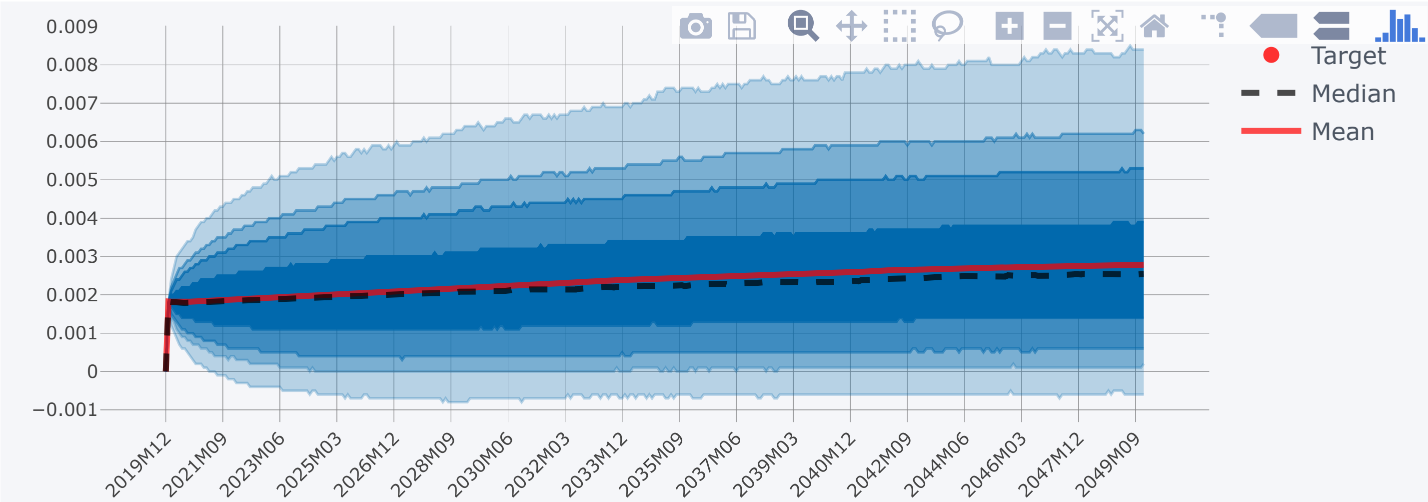
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0	0	0.0001	0.0001
std	0.0079	0.0083	0.0084	0.0083
min	-0.0603	-0.0591	-0.0557	-0.0671
1%	-0.0197	-0.0202	-0.02	-0.0191
5%	-0.0127	-0.0131	-0.0134	-0.0133
10%	-0.0098	-0.0099	-0.0102	-0.0102
25%	-0.0049	-0.0052	-0.0052	-0.0053
50%	0.0002	0	0.0003	0.0001
75%	0.0051	0.0054	0.0056	0.0056
90%	0.0096	0.0102	0.0104	0.0104
95%	0.0122	0.013	0.0133	0.0135
99%	0.0173	0.0191	0.0194	0.0192
max	0.0292	0.0321	0.032	0.0411

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

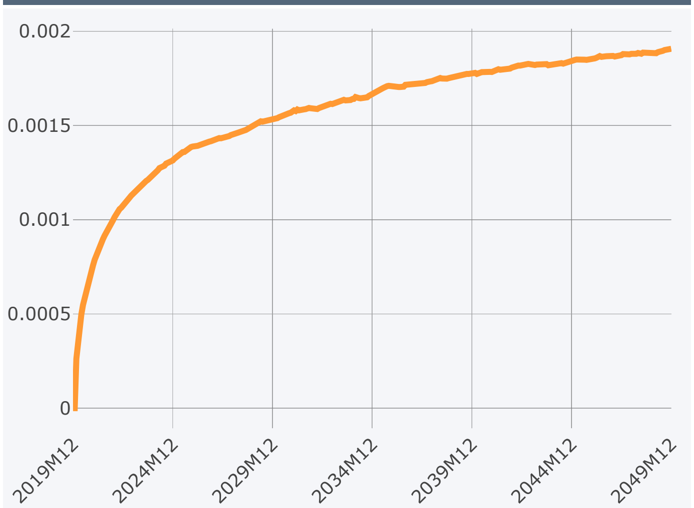
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

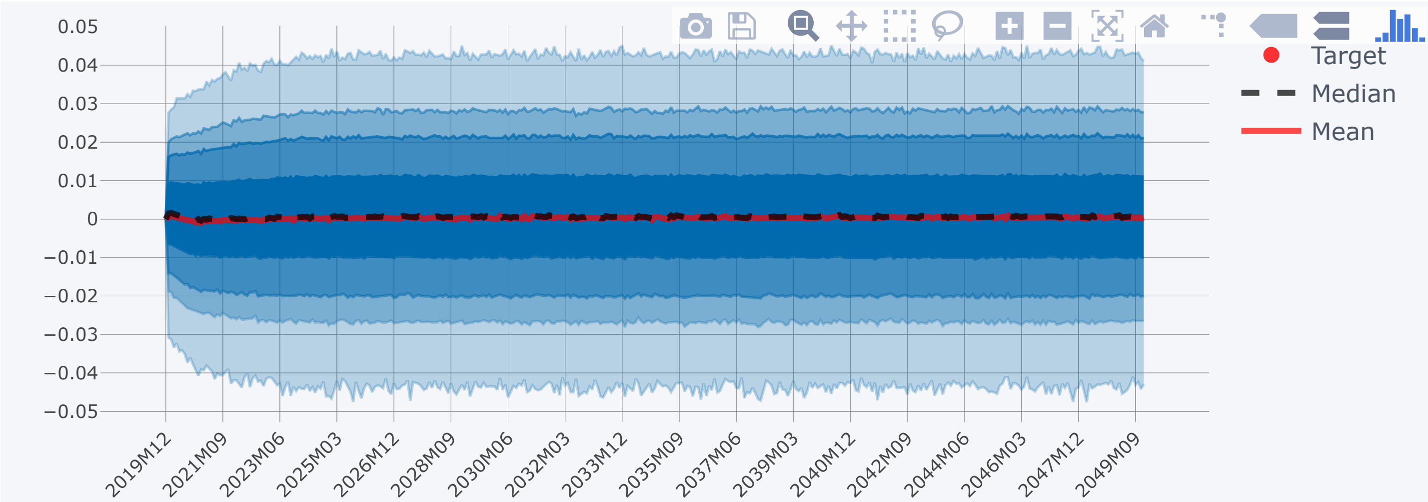
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0018	0.0022	0.0026	0.0028
std	0.0008	0.0015	0.0018	0.0019
min	-0.0008	-0.002	-0.0015	-0.002
1%	0.0002	-0.0007	-0.0006	-0.0006
5%	0.0007	0	0.0001	0.0002
10%	0.0009	0.0004	0.0005	0.0006
25%	0.0013	0.0011	0.0013	0.0014
50%	0.0018	0.0021	0.0023	0.0025
75%	0.0023	0.0032	0.0036	0.0039
90%	0.0028	0.0043	0.005	0.0053
95%	0.0031	0.005	0.0059	0.0062
99%	0.0038	0.0064	0.0076	0.0084
max	0.0056	0.0109	0.013	0.0145

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

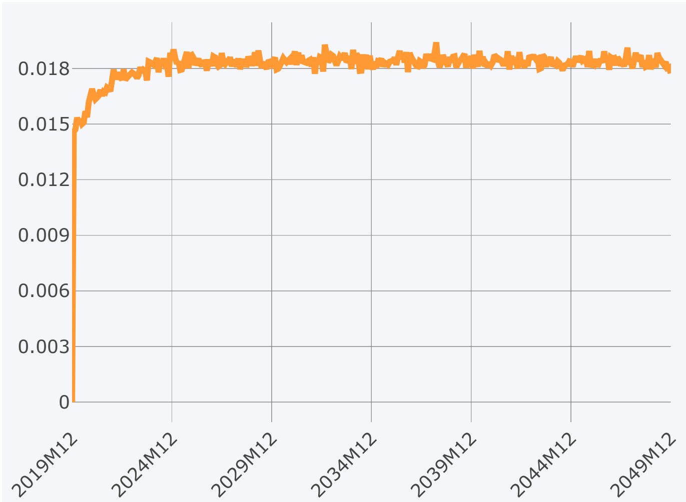
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

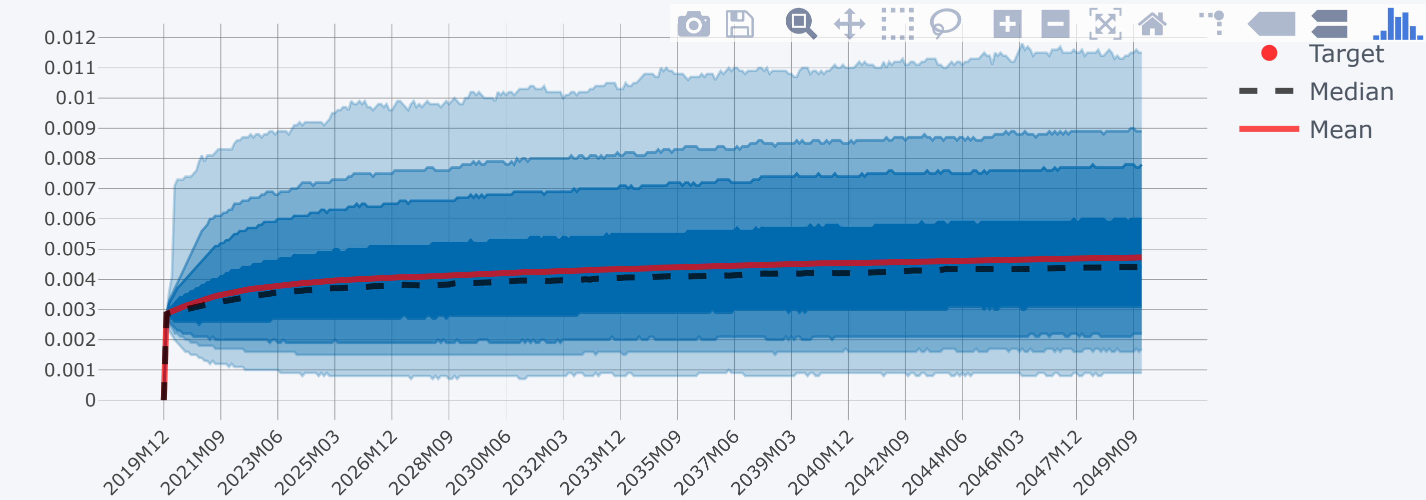
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	-0.0007	0.0002	0.0004	0.0004
std	0.0169	0.0182	0.0187	0.0177
min	-0.2219	-0.1635	-0.1574	-0.1357
1%	-0.0407	-0.0437	-0.0439	-0.0429
5%	-0.0241	-0.0264	-0.0275	-0.0265
10%	-0.0181	-0.0204	-0.0201	-0.0199
25%	-0.0092	-0.0102	-0.0101	-0.0101
50%	0	0.0005	0.0006	0.0005
75%	0.009	0.011	0.0116	0.011
90%	0.0177	0.0211	0.0221	0.0211
95%	0.0228	0.0285	0.0286	0.0278
99%	0.0337	0.042	0.0426	0.0411
max	0.0748	0.0791	0.0762	0.1219

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

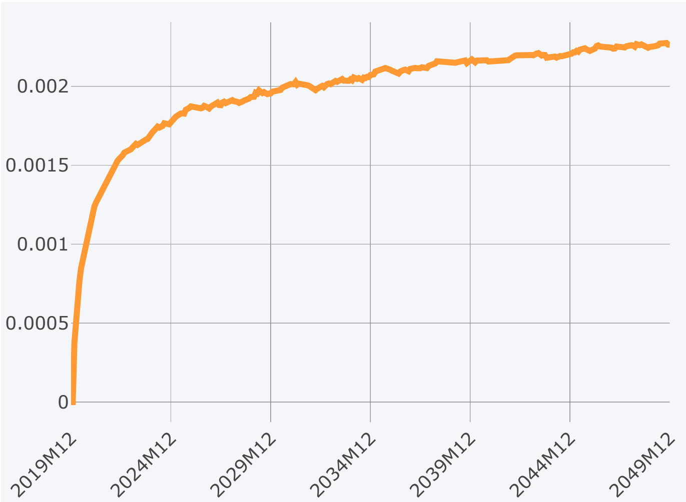
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

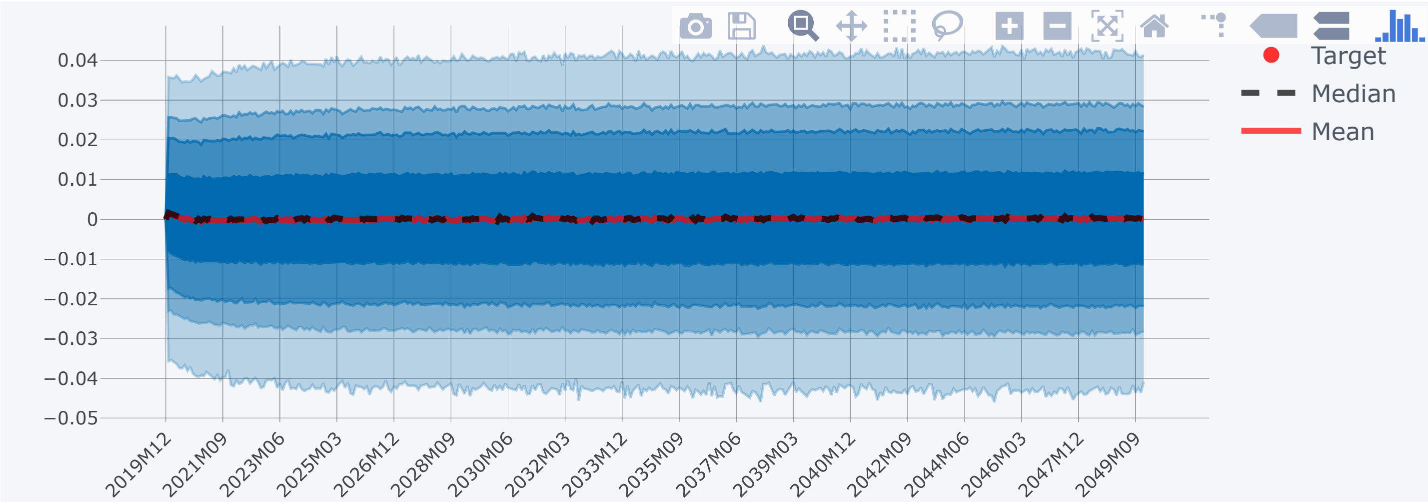
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0033	0.0042	0.0045	0.0047
std	0.0011	0.002	0.0022	0.0023
min	0.0004	-0.0003	-0.0002	-0.0004
1%	0.0015	0.0008	0.0008	0.0009
5%	0.0019	0.0015	0.0016	0.0017
10%	0.0021	0.0019	0.0021	0.0022
25%	0.0026	0.0028	0.003	0.0031
50%	0.0031	0.0039	0.0042	0.0044
75%	0.0037	0.0053	0.0057	0.006
90%	0.0044	0.0068	0.0074	0.0078
95%	0.0052	0.0079	0.0086	0.0089
99%	0.0076	0.01	0.0109	0.0115
max	0.0141	0.0195	0.0175	0.021

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

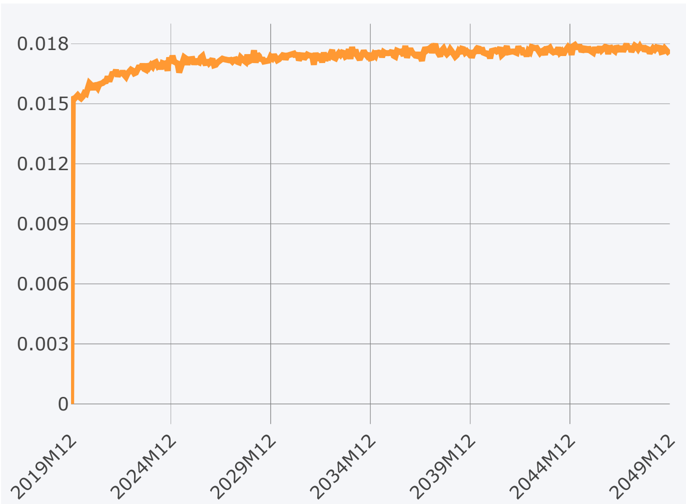
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

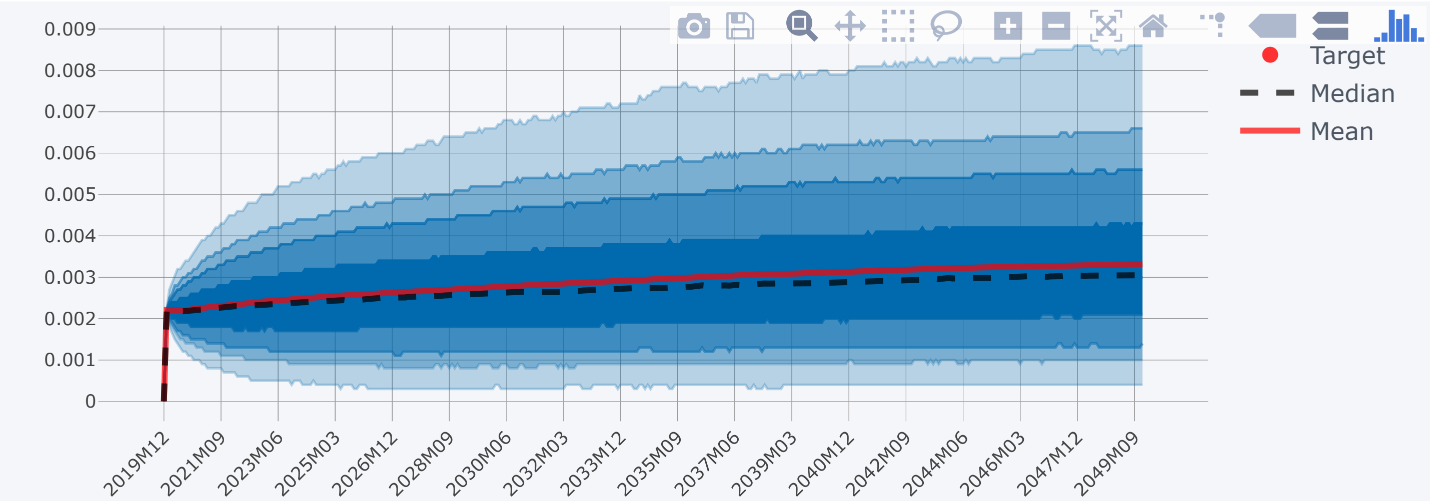
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	-0.0003	-0.0001	0.0002	0.0001
std	0.016	0.0174	0.0176	0.0175
min	-0.0979	-0.1107	-0.1051	-0.114
1%	-0.0396	-0.0431	-0.0427	-0.0408
5%	-0.0262	-0.0278	-0.0286	-0.0283
10%	-0.0202	-0.0209	-0.0218	-0.0218
25%	-0.0104	-0.0111	-0.0112	-0.0113
50%	0.0001	-0.0001	0.0004	0
75%	0.0103	0.011	0.0118	0.0117
90%	0.0195	0.0217	0.0222	0.0222
95%	0.0248	0.0278	0.0285	0.0283
99%	0.0356	0.0404	0.042	0.0414
max	0.06	0.0748	0.071	0.1023

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

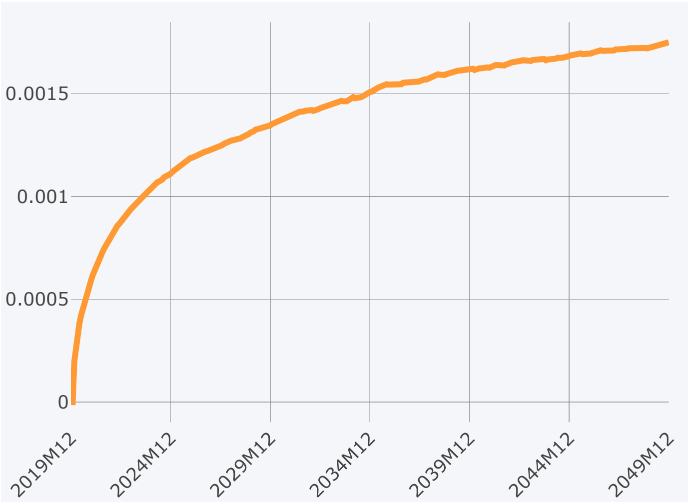
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

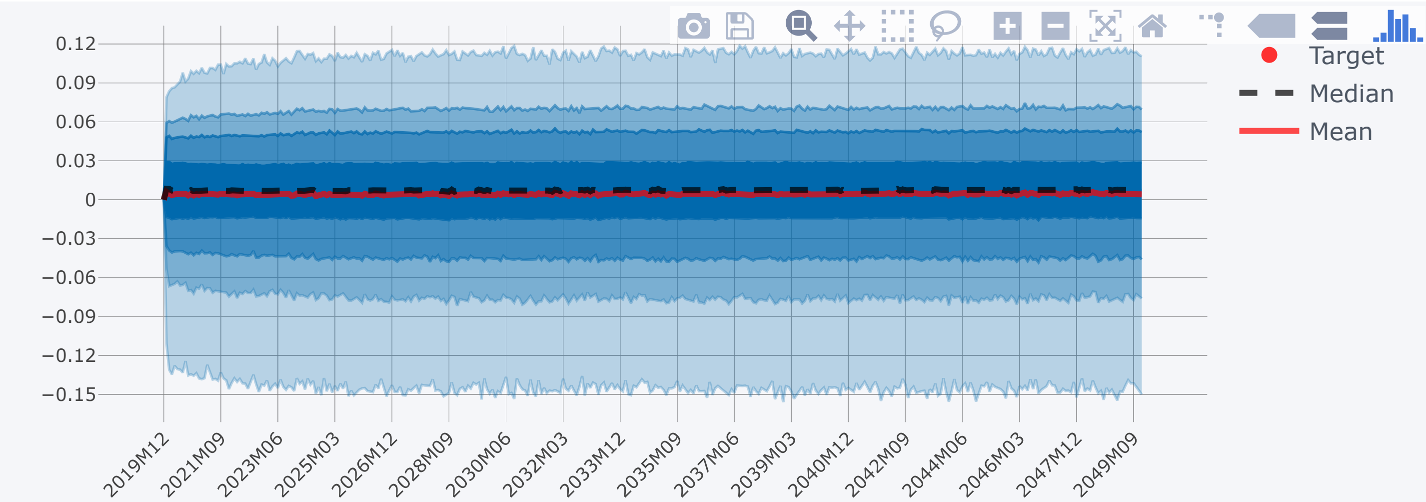
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0022	0.0028	0.0031	0.0033
std	0.0006	0.0013	0.0016	0.0017
min	0.0002	-0.0005	-0.0004	-0.0005
1%	0.001	0.0003	0.0004	0.0004
5%	0.0013	0.0009	0.0009	0.001
10%	0.0015	0.0012	0.0013	0.0014
25%	0.0018	0.0018	0.0019	0.0021
50%	0.0022	0.0026	0.0029	0.003
75%	0.0026	0.0036	0.004	0.0043
90%	0.003	0.0045	0.0053	0.0056
95%	0.0032	0.0052	0.0062	0.0066
99%	0.0037	0.0066	0.0079	0.0086
max	0.0052	0.0111	0.0135	0.0145

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

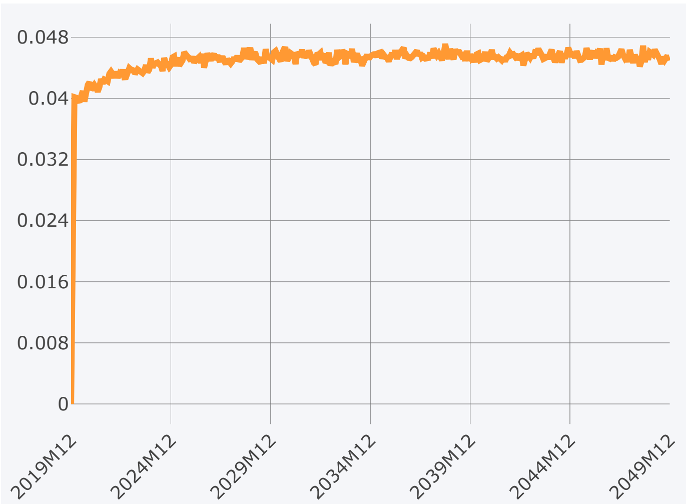
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

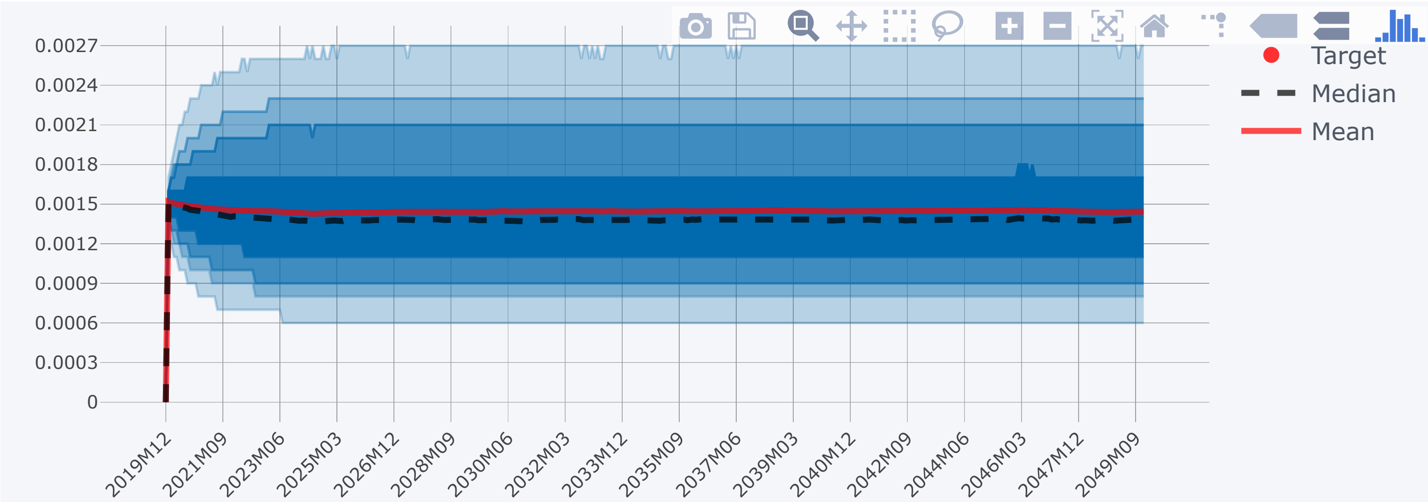
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0043	0.0035	0.0044	0.0041
std	0.0412	0.0452	0.0458	0.0454
min	-0.2515	-0.2897	-0.3101	-0.3192
1%	-0.1337	-0.1495	-0.147	-0.15
5%	-0.0678	-0.0771	-0.076	-0.0761
10%	-0.0409	-0.045	-0.0445	-0.046
25%	-0.0138	-0.0151	-0.0142	-0.0142
50%	0.0069	0.0067	0.007	0.0075
75%	0.0274	0.0271	0.0288	0.0285
90%	0.0487	0.0507	0.0534	0.0521
95%	0.0646	0.0678	0.0701	0.0694
99%	0.0993	0.1148	0.1106	0.1105
max	0.1969	0.2295	0.247	0.2114

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

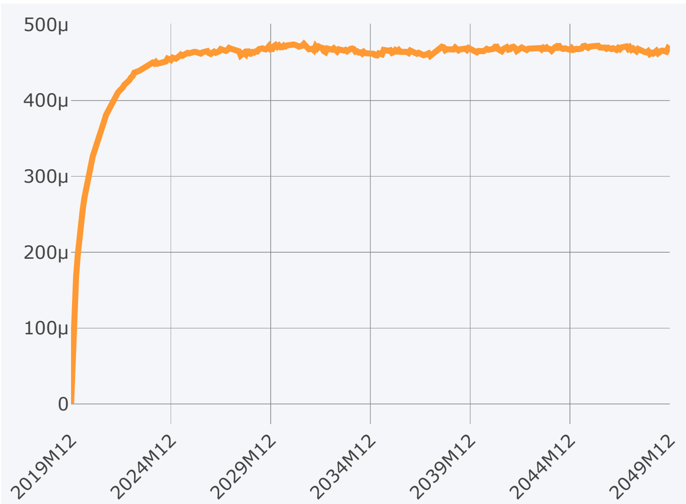
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

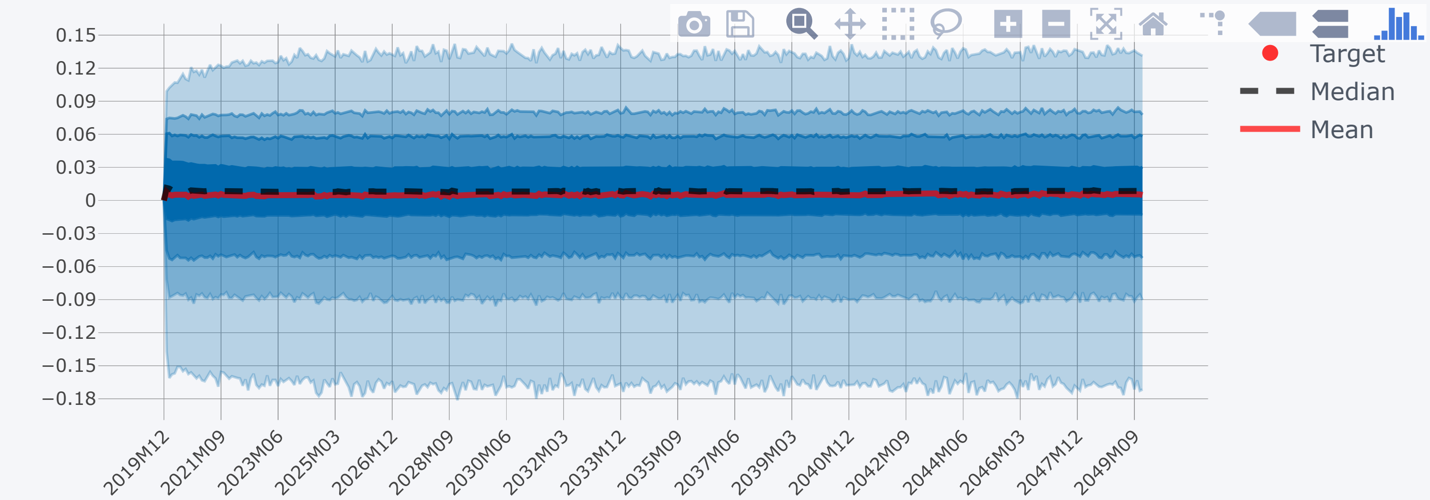
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0015	0.0014	0.0015	0.0014
std	0.0003	0.0005	0.0005	0.0005
min	0.0005	0.0004	0.0003	0.0003
1%	0.0008	0.0006	0.0006	0.0006
5%	0.001	0.0008	0.0008	0.0008
10%	0.0011	0.0009	0.0009	0.0009
25%	0.0012	0.0011	0.0011	0.0011
50%	0.0014	0.0014	0.0014	0.0014
75%	0.0017	0.0017	0.0017	0.0017
90%	0.0019	0.0021	0.0021	0.0021
95%	0.002	0.0023	0.0023	0.0023
99%	0.0023	0.0027	0.0027	0.0027
max	0.0029	0.0033	0.0034	0.0034

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

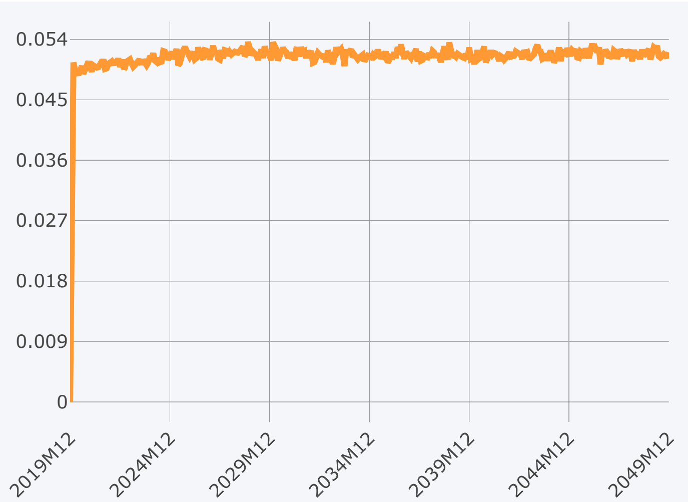
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

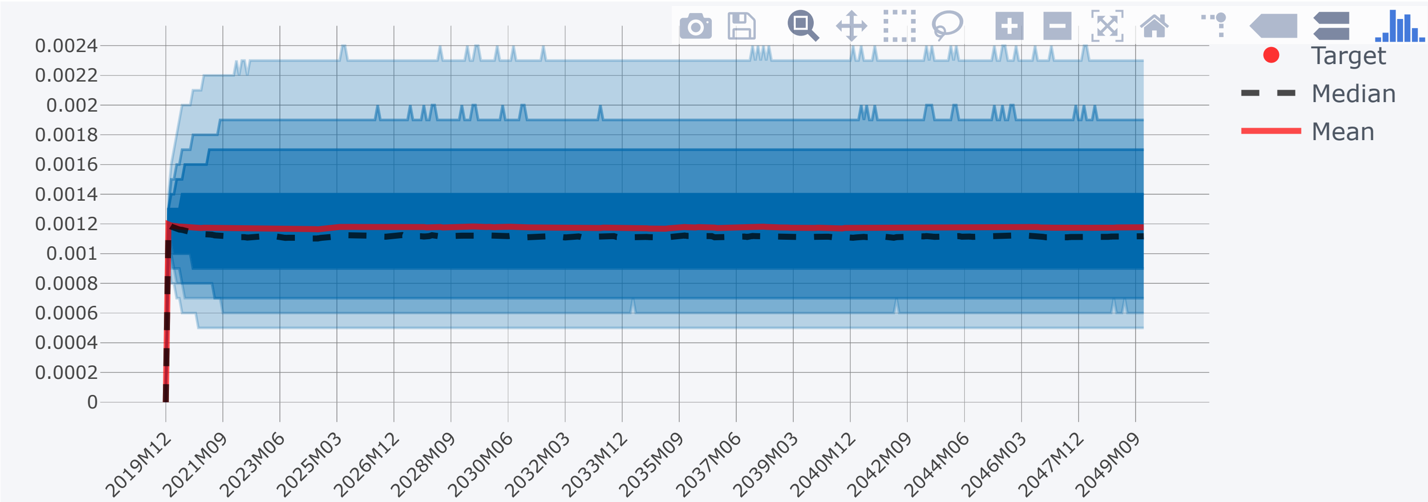
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.005	0.0039	0.0052	0.0049
std	0.0498	0.0515	0.0528	0.0521
min	-0.2839	-0.3121	-0.4132	-0.3482
1%	-0.1615	-0.1678	-0.1719	-0.1716
5%	-0.0854	-0.0902	-0.09	-0.0903
10%	-0.0523	-0.0515	-0.0489	-0.0522
25%	-0.0159	-0.0139	-0.0132	-0.013
50%	0.0088	0.0076	0.0083	0.0087
75%	0.0324	0.0277	0.0294	0.0302
90%	0.059	0.0561	0.0599	0.0583
95%	0.077	0.0777	0.0832	0.0778
99%	0.1178	0.1328	0.1341	0.1313
max	0.2324	0.3267	0.3586	0.285

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

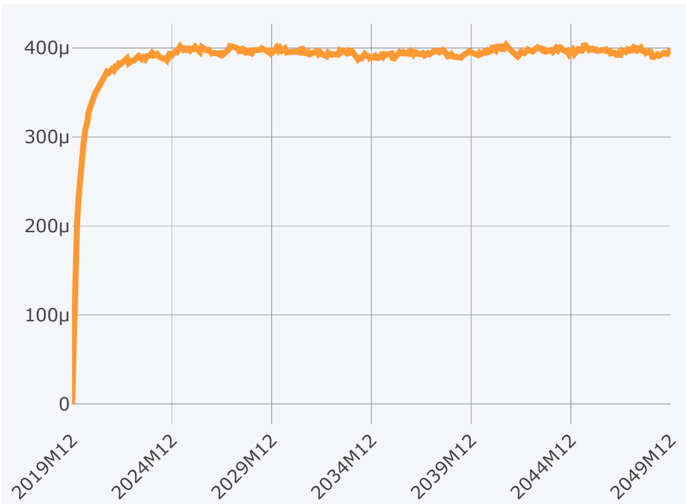
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

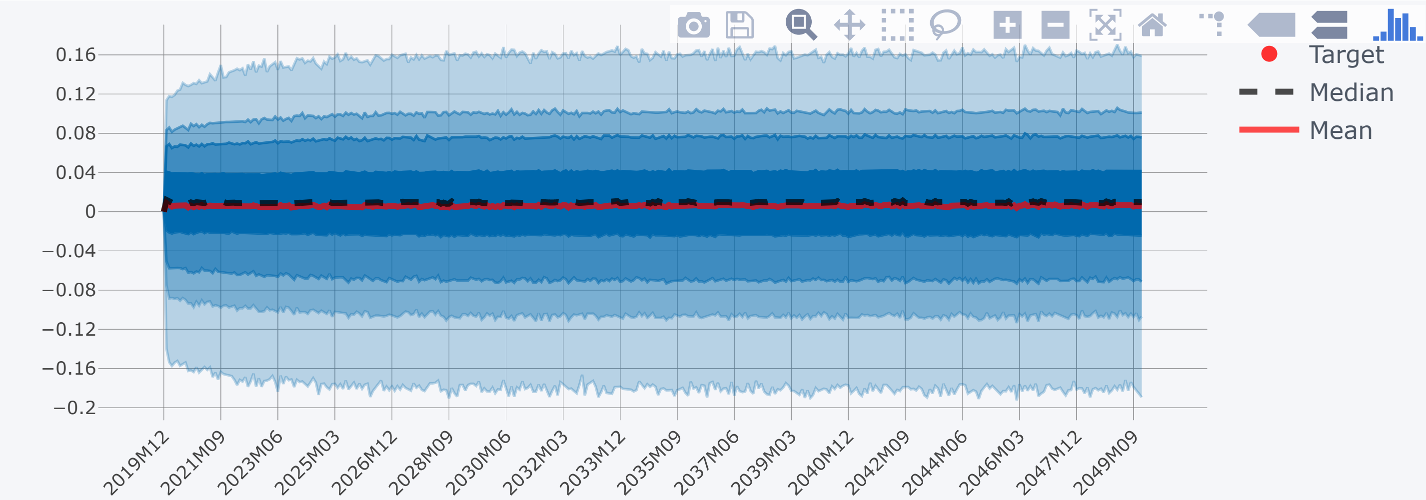
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0012	0.0012	0.0012	0.0012
std	0.0003	0.0004	0.0004	0.0004
min	0.0003	0.0003	0.0003	0.0002
1%	0.0005	0.0005	0.0005	0.0005
5%	0.0007	0.0006	0.0006	0.0006
10%	0.0008	0.0007	0.0007	0.0007
25%	0.0009	0.0009	0.0009	0.0009
50%	0.0011	0.0011	0.0011	0.0011
75%	0.0014	0.0014	0.0014	0.0014
90%	0.0016	0.0017	0.0017	0.0017
95%	0.0018	0.0019	0.0019	0.0019
99%	0.0021	0.0023	0.0023	0.0023
max	0.0028	0.0035	0.0032	0.0038

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

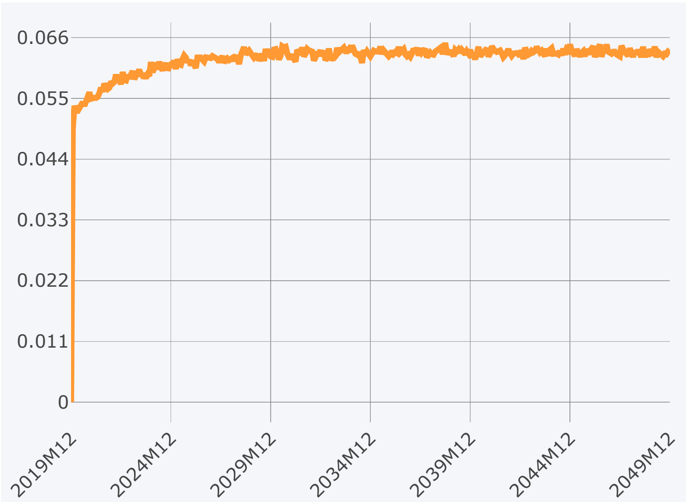
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

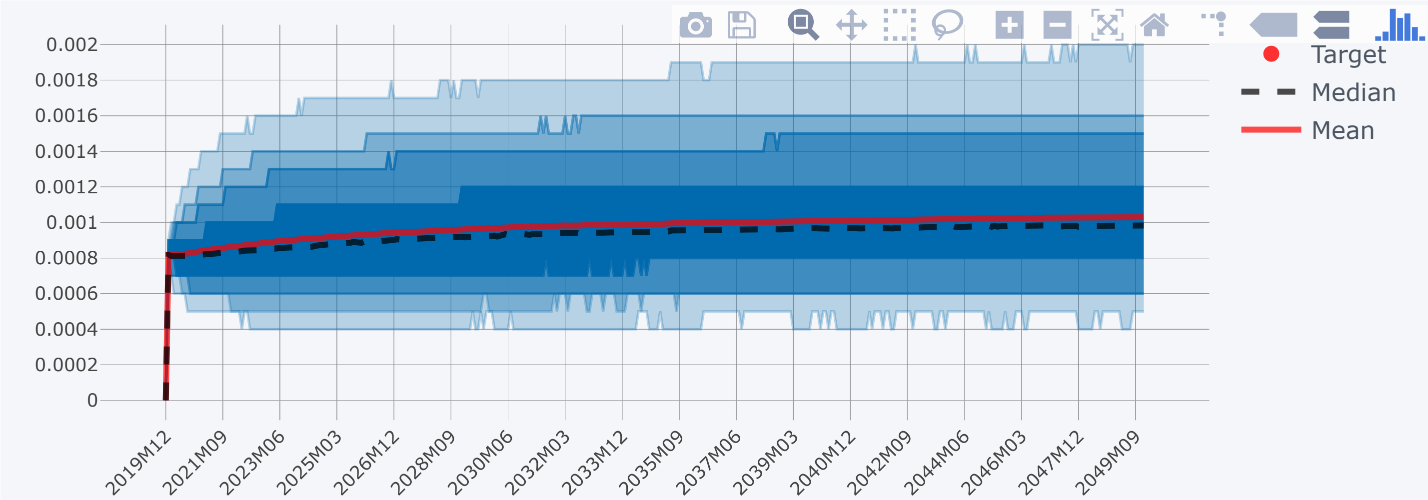
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0058	0.0048	0.0066	0.0054
std	0.0549	0.0626	0.0638	0.0639
min	-0.3247	-0.3116	-0.4103	-0.3653
1%	-0.1587	-0.1835	-0.1799	-0.1893
5%	-0.0918	-0.1061	-0.1068	-0.1071
10%	-0.0611	-0.0697	-0.0696	-0.0715
25%	-0.0215	-0.0249	-0.0244	-0.0244
50%	0.0097	0.0088	0.01	0.0098
75%	0.0377	0.0393	0.0425	0.0415
90%	0.0684	0.073	0.0773	0.0756
95%	0.0893	0.0992	0.1031	0.1011
99%	0.1304	0.1597	0.1652	0.1589
max	0.2526	0.3608	0.4241	0.3241

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

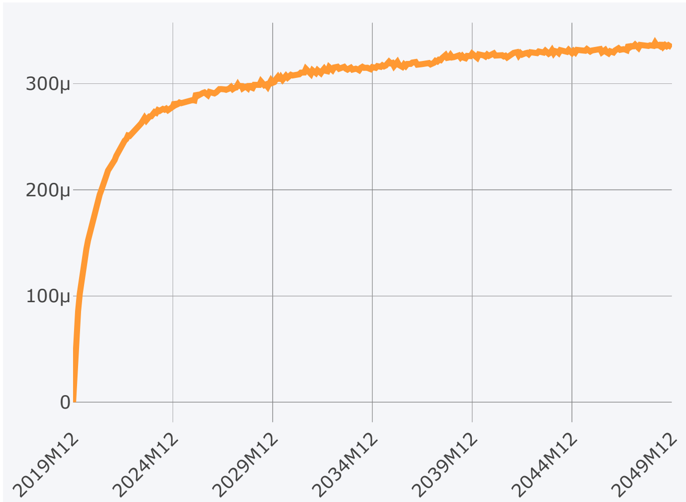
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

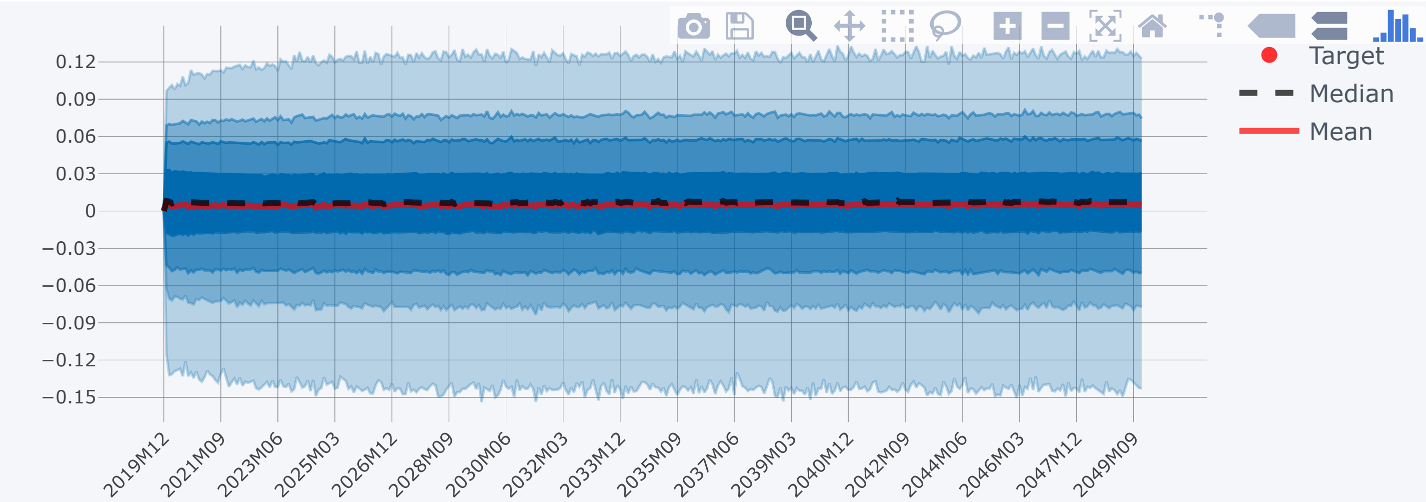
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0008	0.001	0.001	0.001
std	0.0002	0.0003	0.0003	0.0003
min	0.0004	0.0003	0.0003	0.0003
1%	0.0005	0.0005	0.0005	0.0005
5%	0.0006	0.0005	0.0006	0.0006
10%	0.0006	0.0006	0.0006	0.0006
25%	0.0007	0.0007	0.0008	0.0008
50%	0.0008	0.0009	0.001	0.001
75%	0.0009	0.0012	0.0012	0.0012
90%	0.0011	0.0014	0.0015	0.0015
95%	0.0012	0.0015	0.0016	0.0016
99%	0.0013	0.0018	0.0019	0.002
max	0.0018	0.0023	0.0027	0.0025

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

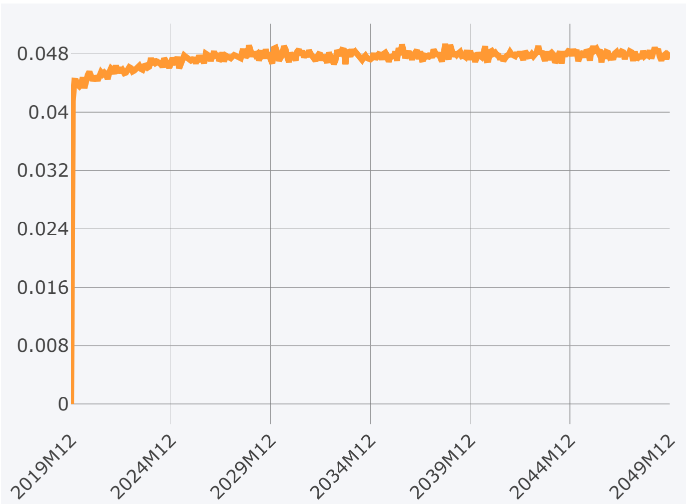
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

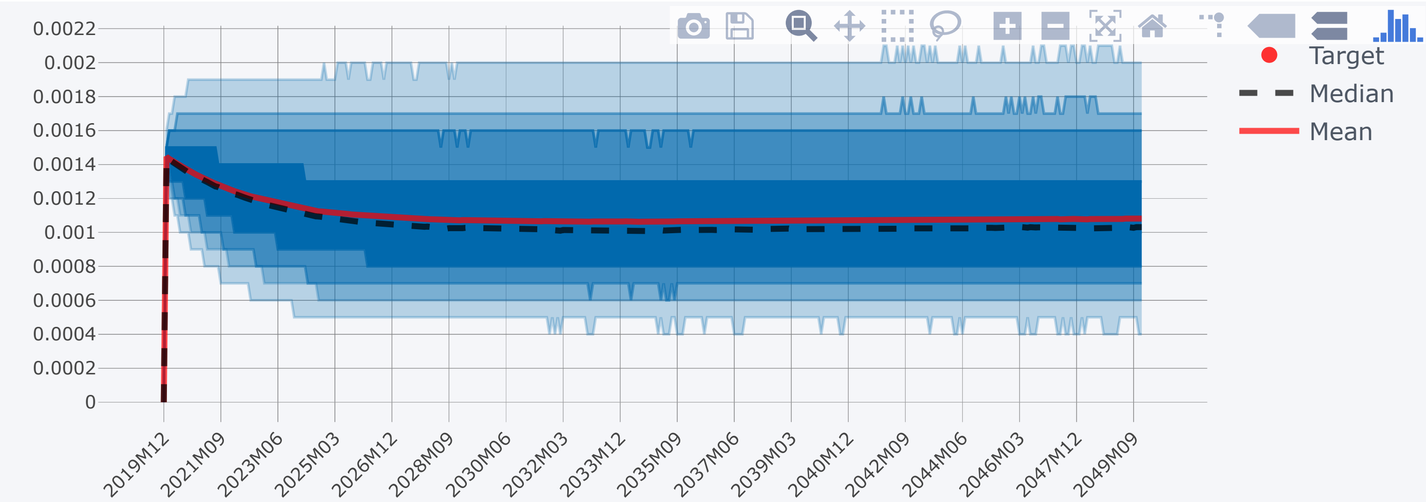
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0046	0.004	0.0049	0.0048
std	0.0446	0.0472	0.0484	0.0477
min	-0.2621	-0.2737	-0.3077	-0.3273
1%	-0.1291	-0.1448	-0.1489	-0.1428
5%	-0.0709	-0.0762	-0.0785	-0.0773
10%	-0.0471	-0.0487	-0.0481	-0.0495
25%	-0.0174	-0.017	-0.0169	-0.0159
50%	0.0063	0.0061	0.0067	0.007
75%	0.0307	0.0283	0.0299	0.0306
90%	0.055	0.055	0.0574	0.0566
95%	0.0721	0.0751	0.0769	0.0746
99%	0.1107	0.125	0.1248	0.1225
max	0.2203	0.2607	0.3338	0.2342

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

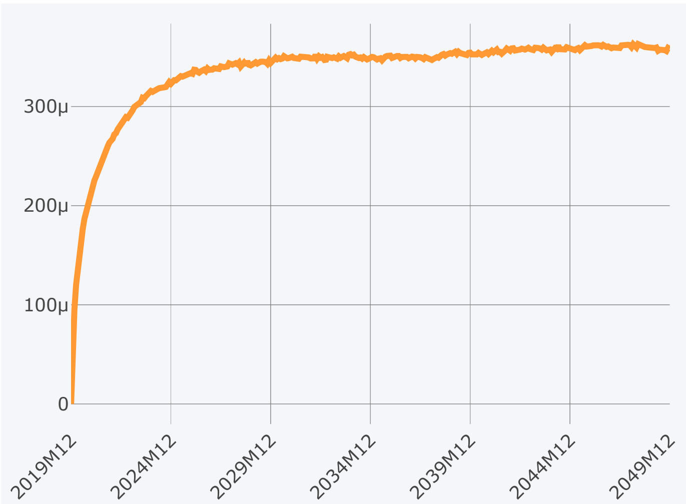
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

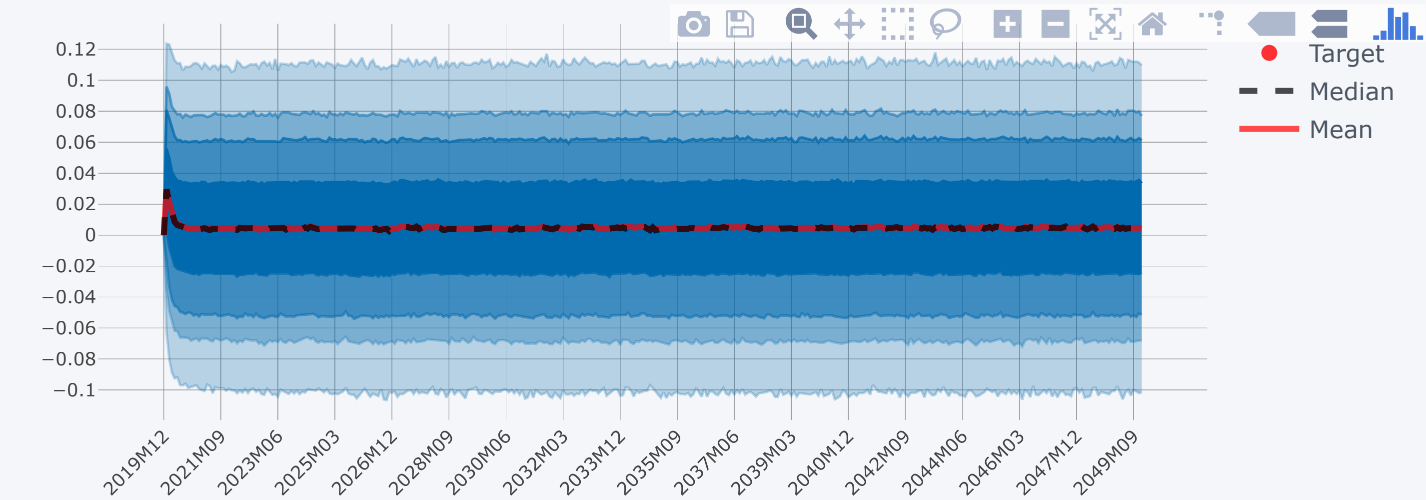
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0013	0.0011	0.0011	0.0011
std	0.0002	0.0003	0.0004	0.0004
min	0.0007	0.0003	0.0003	0.0003
1%	0.0009	0.0005	0.0005	0.0004
5%	0.001	0.0006	0.0006	0.0006
10%	0.0011	0.0007	0.0007	0.0007
25%	0.0012	0.0008	0.0008	0.0008
50%	0.0013	0.001	0.001	0.001
75%	0.0015	0.0013	0.0013	0.0013
90%	0.0016	0.0016	0.0016	0.0016
95%	0.0017	0.0017	0.0017	0.0017
99%	0.0019	0.002	0.002	0.002
max	0.0024	0.0025	0.0028	0.0026

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

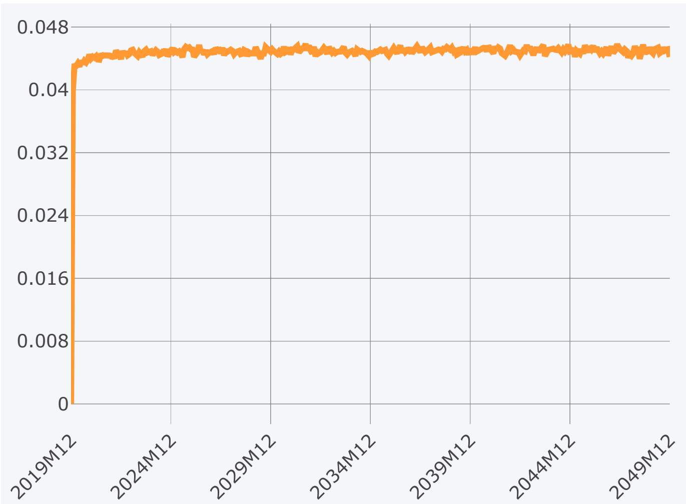
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

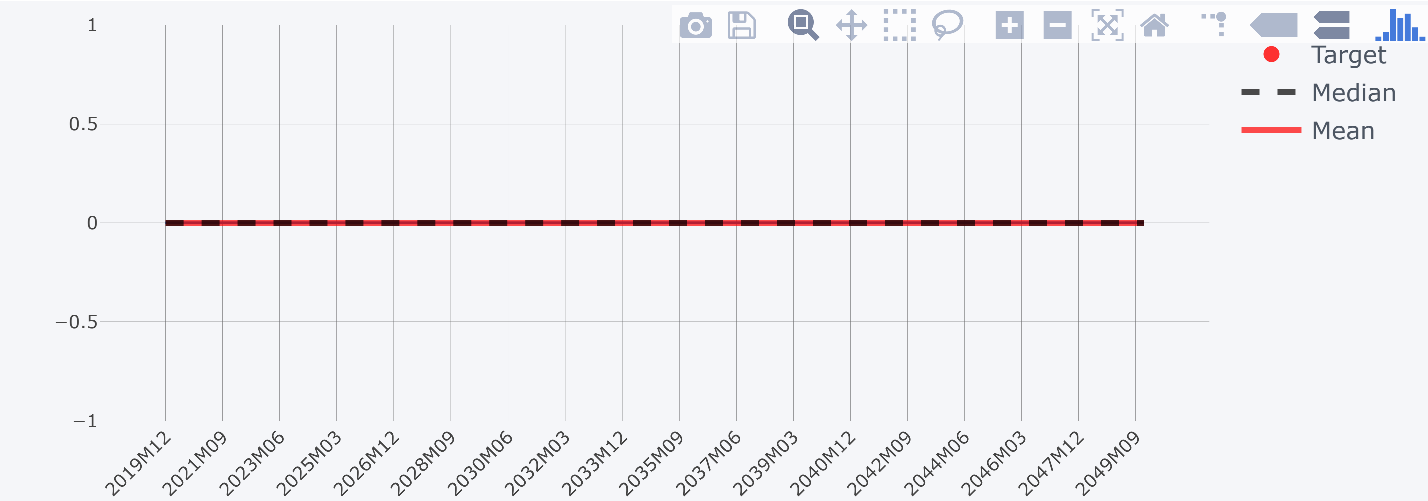
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0046	0.0051	0.0048	0.0048
std	0.044	0.0448	0.0452	0.0442
min	-0.1974	-0.1812	-0.1889	-0.187
1%	-0.097	-0.102	-0.1015	-0.1015
5%	-0.0667	-0.0676	-0.069	-0.0681
10%	-0.0512	-0.0509	-0.0525	-0.0514
25%	-0.0246	-0.0243	-0.0246	-0.0242
50%	0.0041	0.0048	0.0047	0.0048
75%	0.0337	0.0345	0.0343	0.0335
90%	0.0607	0.0627	0.0628	0.0613
95%	0.0775	0.0796	0.0791	0.077
99%	0.111	0.1132	0.1111	0.1095
max	0.18	0.1749	0.1905	0.1839

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

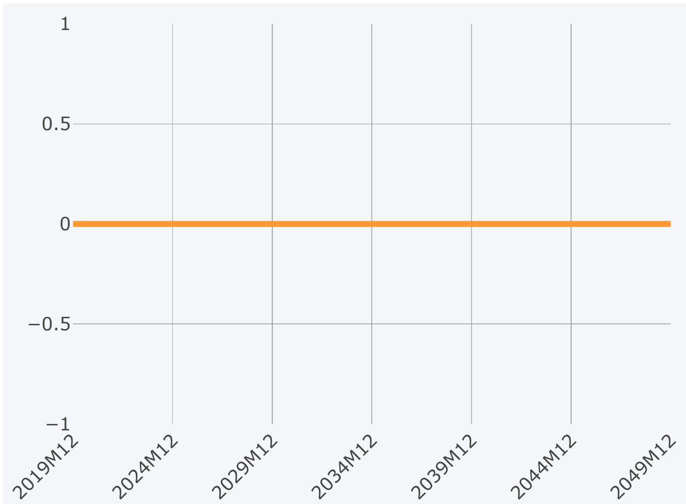
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

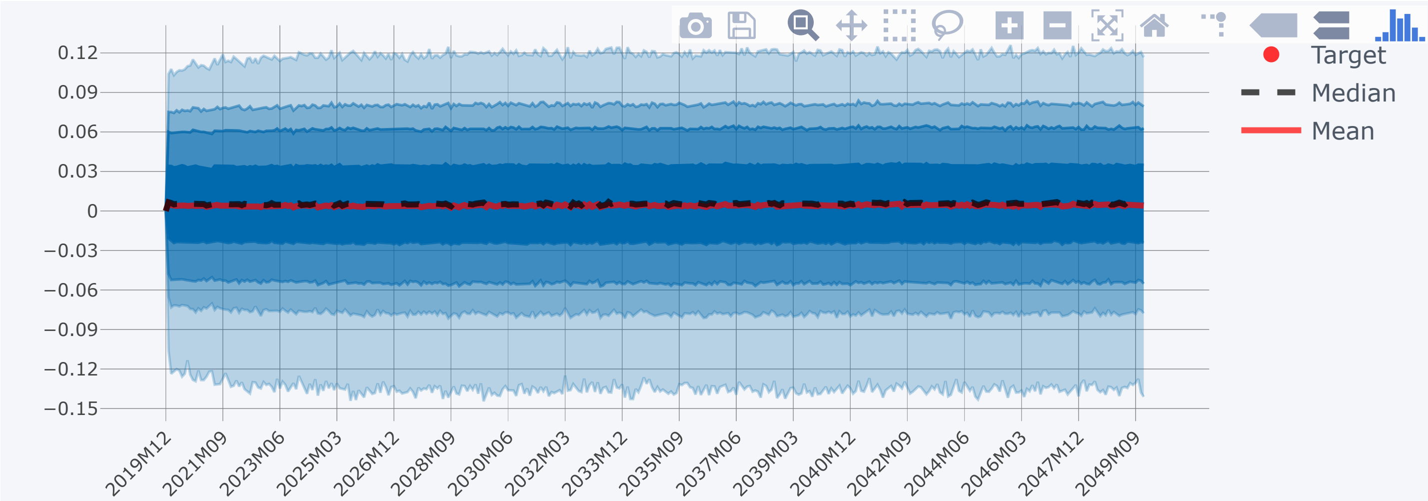
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0	0	0	0
std	0	0	0	0
min	0	0	0	0
1%	0	0	0	0
5%	0	0	0	0
10%	0	0	0	0
25%	0	0	0	0
50%	0	0	0	0
75%	0	0	0	0
90%	0	0	0	0
95%	0	0	0	0
99%	0	0	0	0
max	0	0	0	0

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

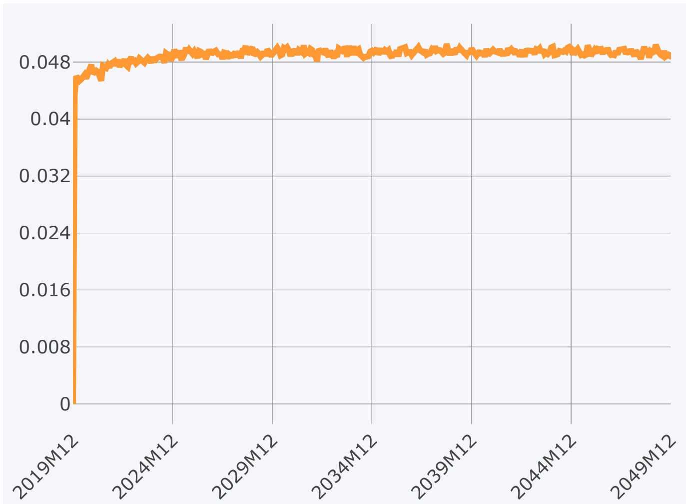
Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

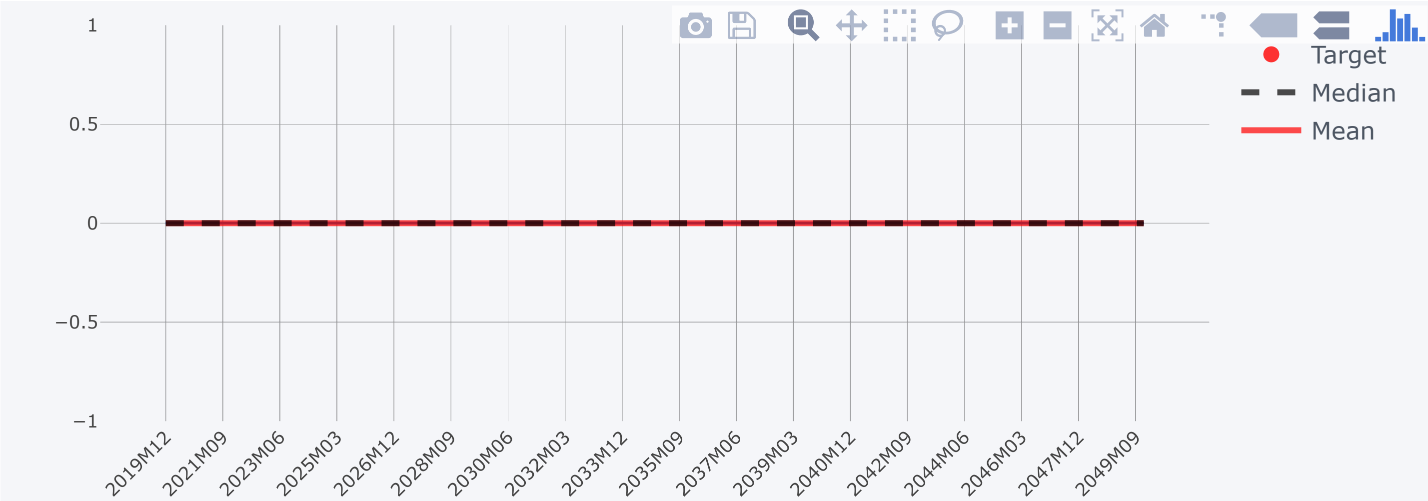
Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0.0042	0.0034	0.0036	0.004
std	0.0464	0.049	0.0499	0.0494
min	-0.2214	-0.2755	-0.2774	-0.2835
1%	-0.1211	-0.1397	-0.1392	-0.1411
5%	-0.074	-0.0781	-0.0806	-0.0777
10%	-0.0524	-0.0546	-0.0551	-0.0552
25%	-0.0241	-0.0242	-0.0247	-0.0241
50%	0.006	0.0046	0.0047	0.0055
75%	0.0336	0.034	0.0348	0.035
90%	0.0602	0.0611	0.0628	0.0627
95%	0.078	0.0788	0.0804	0.0794
99%	0.109	0.1181	0.1223	0.1167
max	0.2084	0.2388	0.2958	0.2137

Cross Sectional Volatility Over Time



Simulated Data in Percentiles



Simulated Data: There are 360 Time Periods. Percentiles, Mean and Median are calculated across 10000 PATHS.

Percentiles Plotted :1%, 5%, 10%, 25%, 50%, 75%, 90%, 95%, 99%

The distributions shown are across the paths for a given time period.

Simulation Summary

	2020-12-31	2029-12-31	2039-12-31	2049-12-31
mean	0	0	0	0
std	0	0	0	0
min	0	0	0	0
1%	0	0	0	0
5%	0	0	0	0
10%	0	0	0	0
25%	0	0	0	0
50%	0	0	0	0
75%	0	0	0	0
90%	0	0	0	0
95%	0	0	0	0
99%	0	0	0	0
max	0	0	0	0

Cross Sectional Volatility Over Time