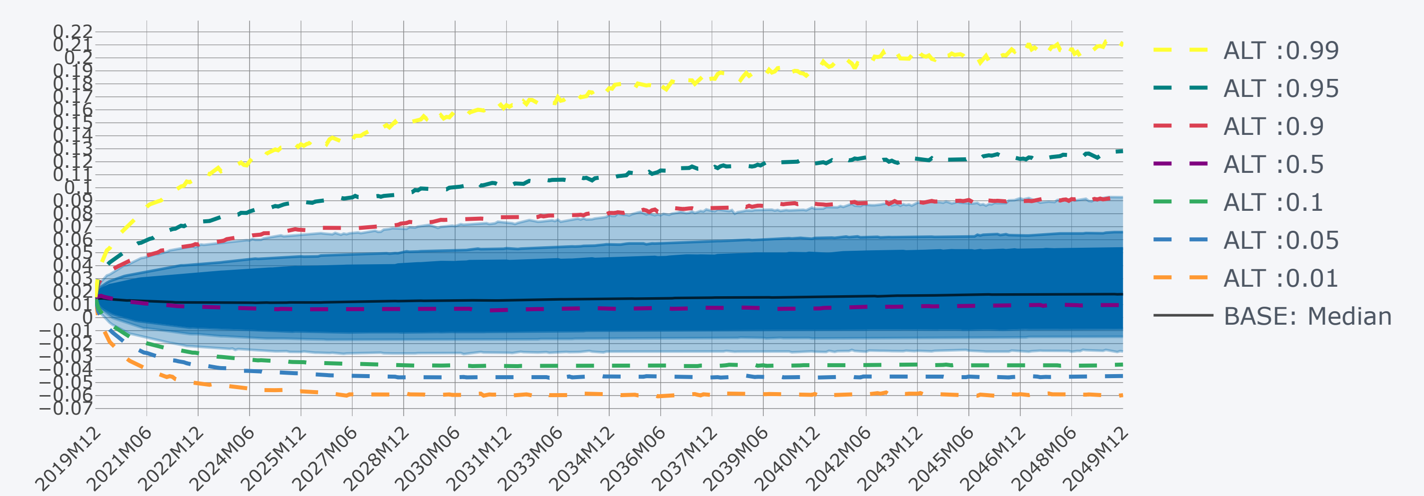
US Treasury 1 Month Yield - Coupon
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles : US Treasury 1 Month Yield - Coupon



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

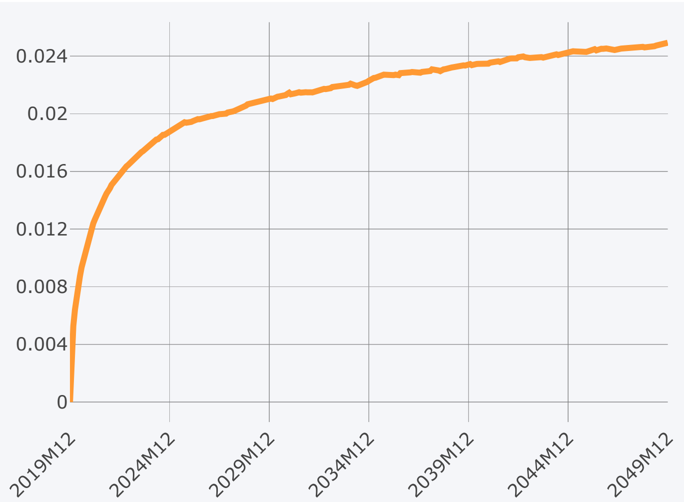
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

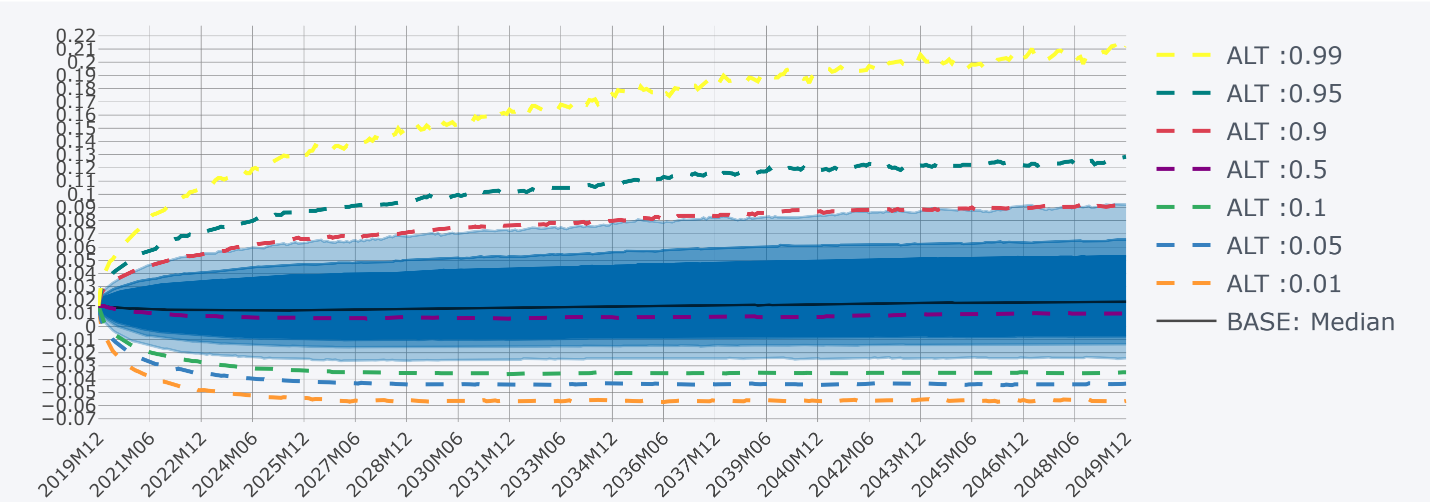
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0134	0.0207	0.0136	0.0212
std	0.0117	0.0249	0.0228	0.0562
min	-0.0266	-0.0459	-0.0561	-0.0806
1%	-0.0124	-0.0261	-0.0333	-0.0597
5%	-0.0052	-0.0148	-0.0215	-0.045
10%	-0.0014	-0.0085	-0.0147	-0.0361
50%	0.0132	0.018	0.0124	0.0096
90%	0.0285	0.0532	0.0438	0.0918
95%	0.0328	0.0658	0.0528	0.1281
99%	0.0416	0.0927	0.0722	0.2123
max	0.0671	0.1666	0.1302	0.4976

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 3 Month Yield - Coupon



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

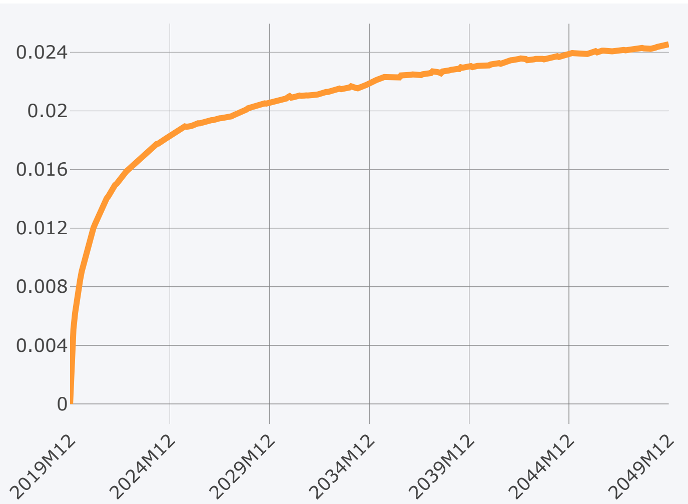
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

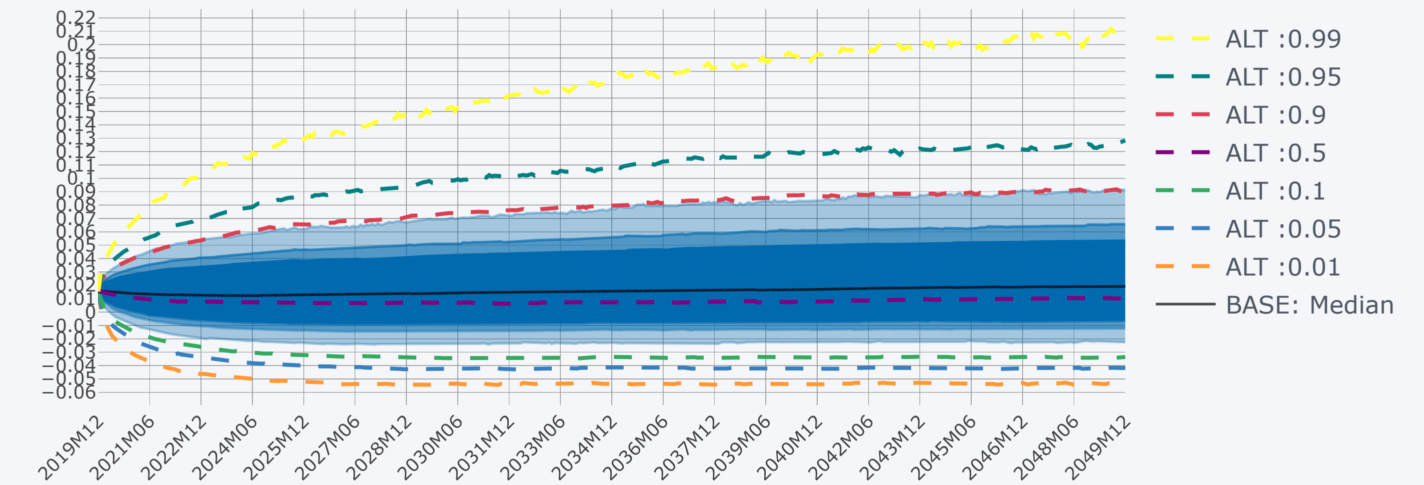
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0138	0.0213	0.0125	0.0214
std	0.0113	0.0245	0.0221	0.0555
min	-0.0247	-0.0451	-0.0542	-0.0732
1%	-0.0113	-0.0242	-0.0327	-0.0565
5%	-0.0043	-0.0136	-0.0212	-0.0434
10%	-0.0005	-0.0076	-0.0149	-0.0349
50%	0.0135	0.0186	0.0114	0.0097
90%	0.0285	0.0532	0.0415	0.0912
95%	0.0327	0.0657	0.0505	0.1283
99%	0.0411	0.0922	0.0698	0.2118
max	0.0669	0.1681	0.1278	0.5001

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 6 Month Yield - Coupon



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

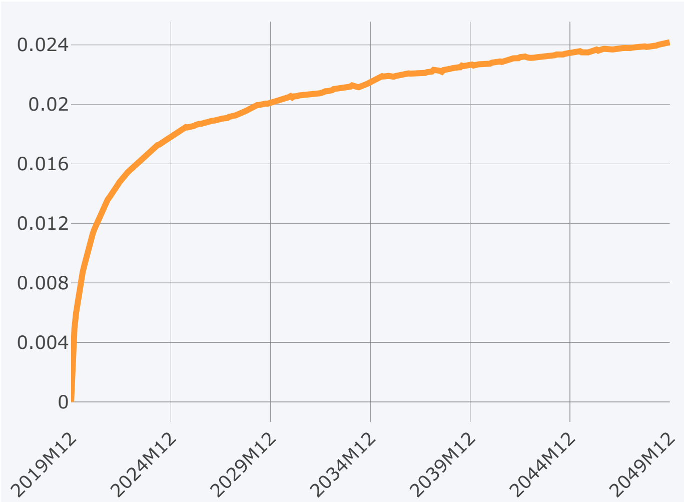
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0141	0.0218	0.012	0.022
std	0.0109	0.0242	0.0214	0.055
min	-0.0229	-0.0438	-0.0518	-0.0672
1%	-0.0101	-0.0225	-0.0317	-0.0535
5%	-0.0033	-0.0124	-0.0206	-0.0418
10%	0.0004	-0.0065	-0.0146	-0.0336
50%	0.0139	0.0192	0.0108	0.01
90%	0.0284	0.0533	0.0401	0.0907
95%	0.0325	0.0657	0.049	0.1284
99%	0.0407	0.0916	0.0674	0.2113
max	0.0661	0.1691	0.1251	0.502

Cross Sectional Volatility Over Time : BASE



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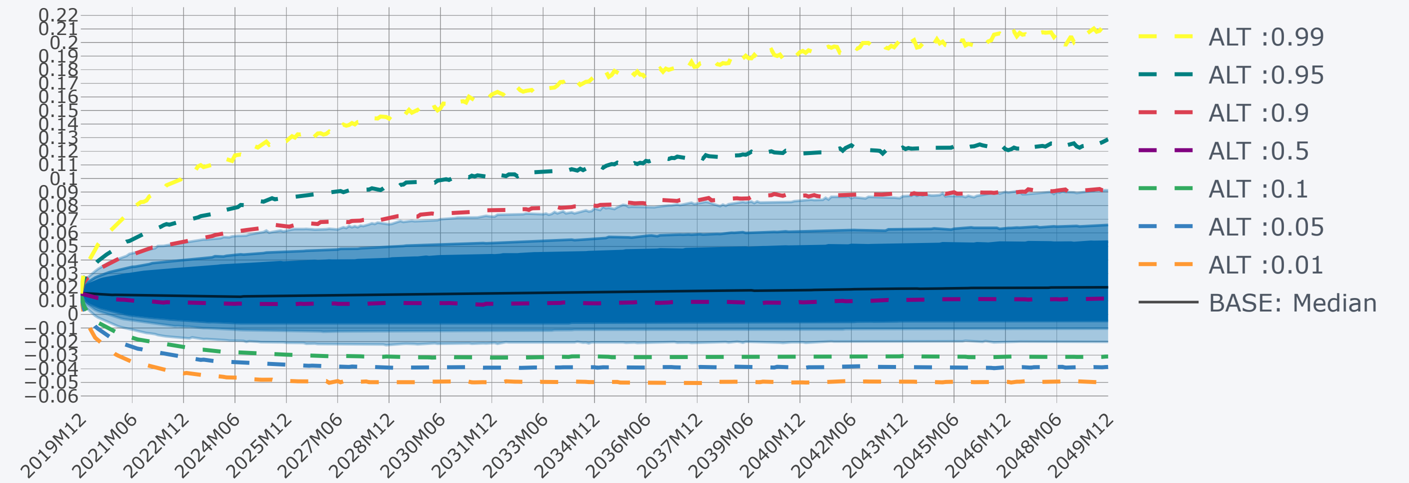
Simulated Data in Percentiles : US Treasury 1 Year Yield - Coupon



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

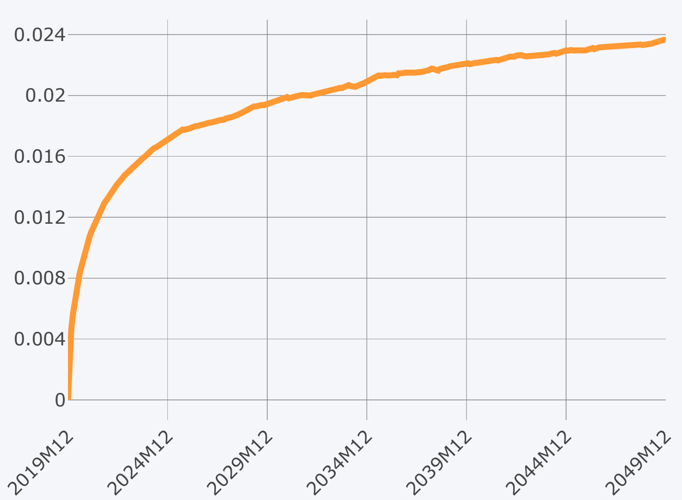
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0146	0.0227	0.0124	0.0234
std	0.0104	0.0236	0.0206	0.0542
min	-0.0211	-0.041	-0.049	-0.0622
1%	-0.0083	-0.0202	-0.0292	-0.0492
5%	-0.0019	-0.0105	-0.0187	-0.0386
10%	0.0016	-0.0048	-0.013	-0.031
50%	0.0144	0.02	0.0112	0.0113
90%	0.0281	0.0535	0.0393	0.0908
95%	0.0322	0.0658	0.048	0.1288
99%	0.0401	0.0913	0.065	0.2114
max	0.0644	0.1698	0.1211	0.5032

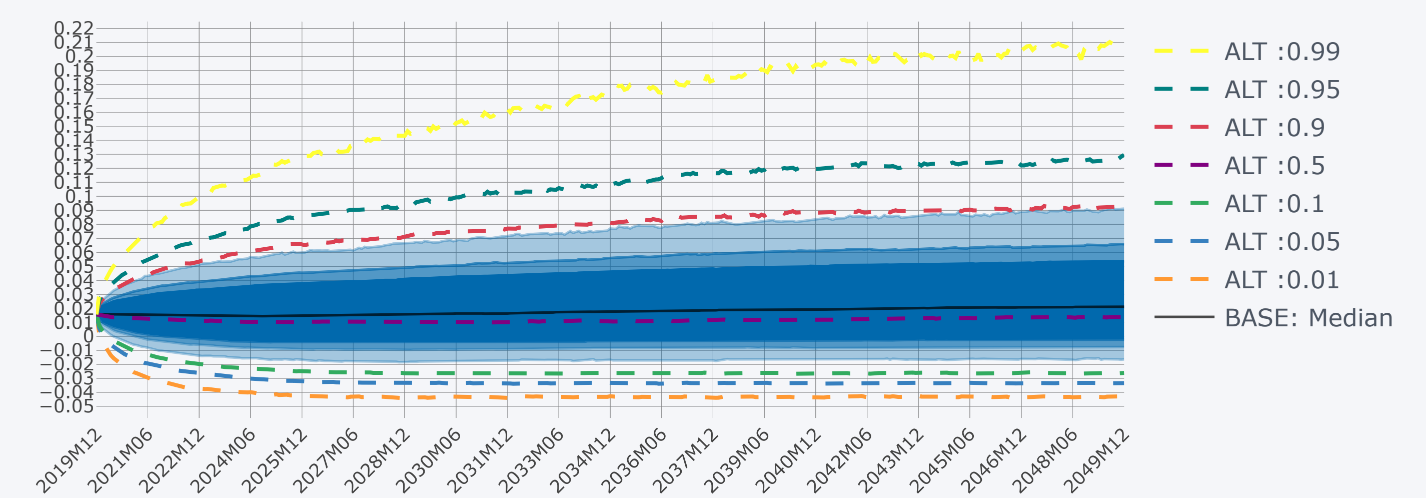
Cross Sectional Volatility Over Time : BASE



US Treasury 2 Year Yield - Coupon
Conning | Risk Solutions

2019 Q4
Validation Report

Simulated Data in Percentiles : US Treasury 2 Year Yield - Coupon



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

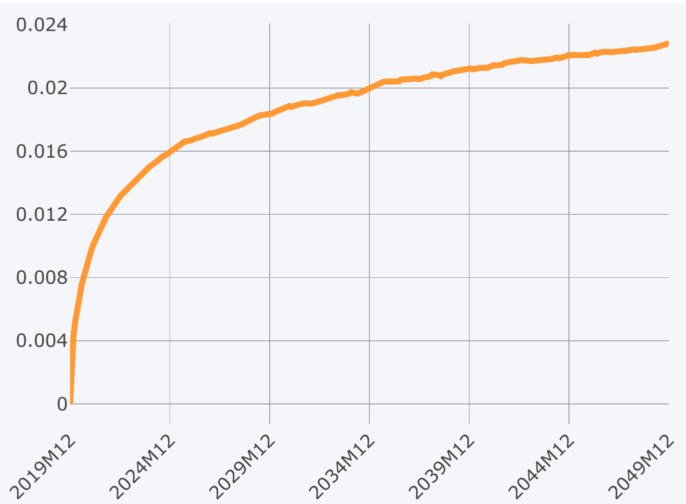
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0154	0.024	0.0143	0.026
std	0.0095	0.0228	0.0192	0.053
min	-0.0177	-0.0356	-0.0432	-0.0551
1%	-0.0057	-0.0165	-0.0244	-0.0429
5%	0.0002	-0.0077	-0.0148	-0.0335
10%	0.0034	-0.0024	-0.0094	-0.0262
50%	0.0152	0.0211	0.0131	0.0138
90%	0.0278	0.0536	0.0395	0.0923
95%	0.0313	0.0658	0.0477	0.1296
99%	0.0386	0.0912	0.0634	0.2103
max	0.0609	0.1699	0.1147	0.503

Cross Sectional Volatility Over Time : BASE



US Treasury 3 Year Yield - Coupon
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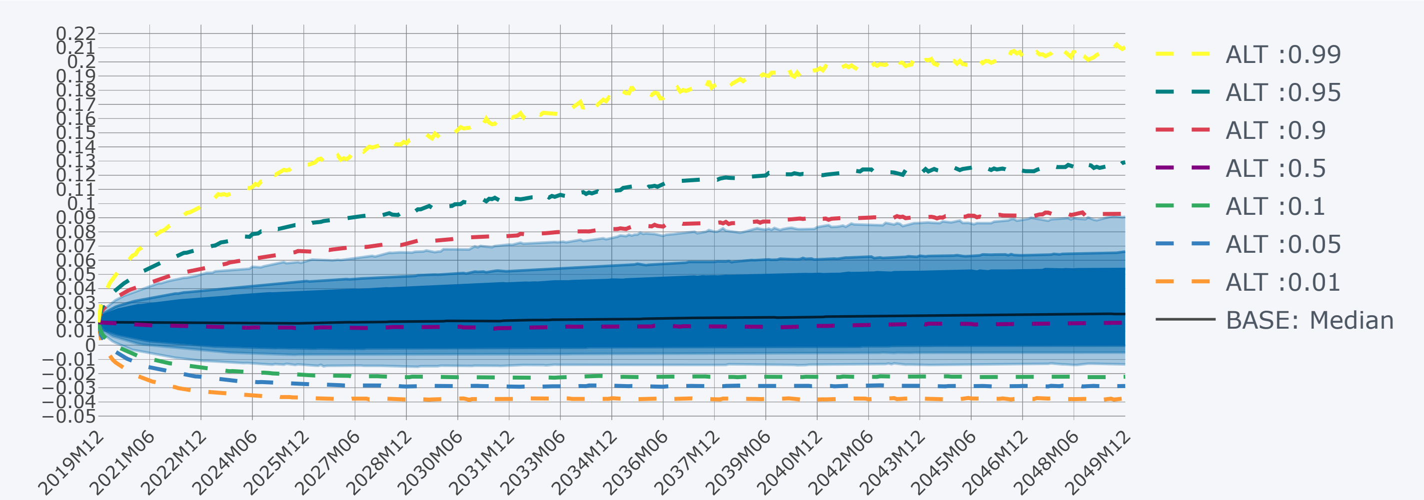
Simulated Data in Percentiles : US Treasury 3 Year Yield - Coupon



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

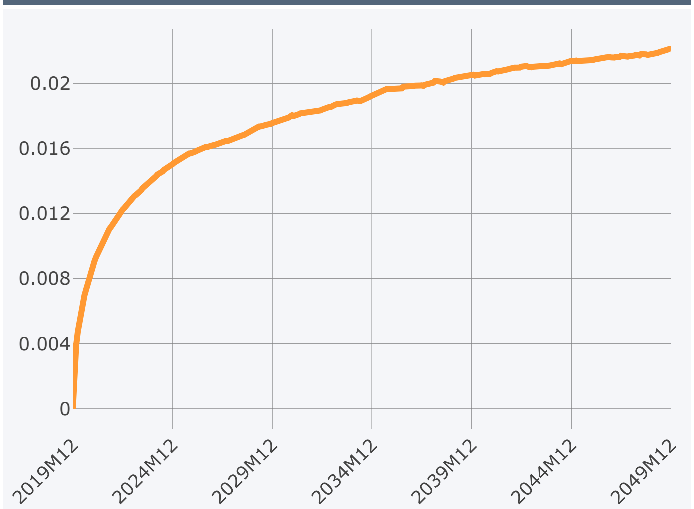
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

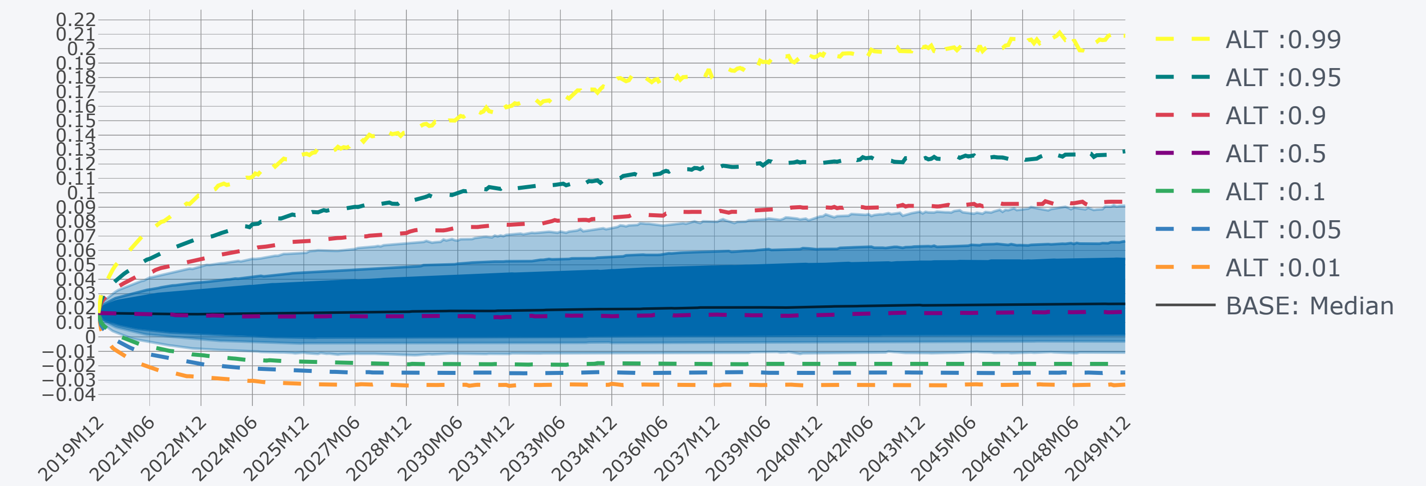
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.016	0.0251	0.0161	0.0282
std	0.0088	0.0221	0.0181	0.0519
min	-0.0147	-0.0309	-0.0378	-0.0486
1%	-0.0033	-0.0135	-0.0202	-0.0375
5%	0.0021	-0.0052	-0.0112	-0.0287
10%	0.0049	-0.0002	-0.0061	-0.0222
50%	0.0158	0.0221	0.0148	0.0159
90%	0.0273	0.0538	0.0398	0.0928
95%	0.0308	0.0661	0.0475	0.1292
99%	0.0373	0.0907	0.0633	0.2104
max	0.058	0.1697	0.1094	0.5018

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 4 Year Yield - Coupon



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

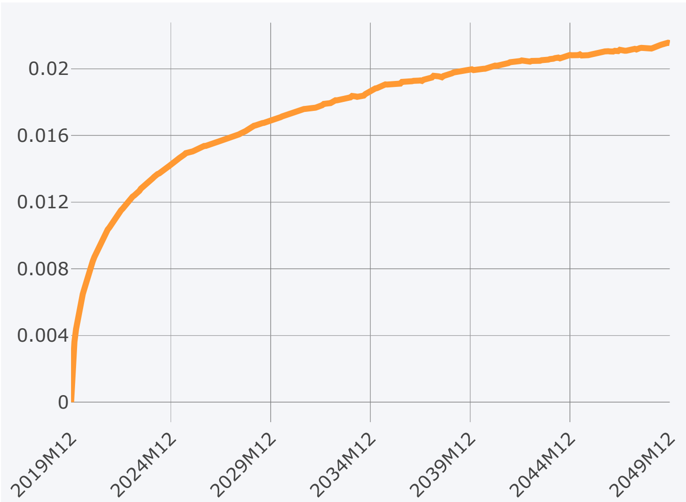
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

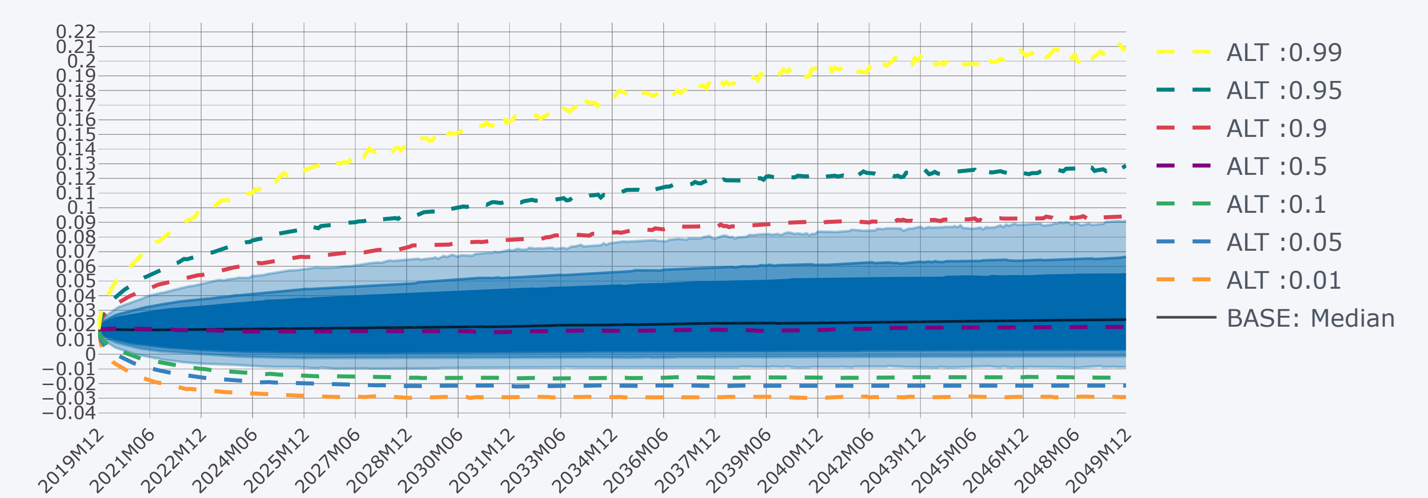
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0165	0.026	0.0177	0.0301
std	0.0082	0.0215	0.0172	0.0509
min	-0.0121	-0.0269	-0.0331	-0.0429
1%	-0.0013	-0.0109	-0.0165	-0.0331
5%	0.0037	-0.0032	-0.0082	-0.0247
10%	0.0063	0.0016	-0.0035	-0.0187
50%	0.0163	0.0229	0.0163	0.0174
90%	0.0271	0.054	0.0402	0.0938
95%	0.0303	0.0664	0.0476	0.1288
99%	0.0364	0.0911	0.0624	0.209
max	0.0556	0.1695	0.1049	0.5002

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 5 Year Yield - Coupon



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

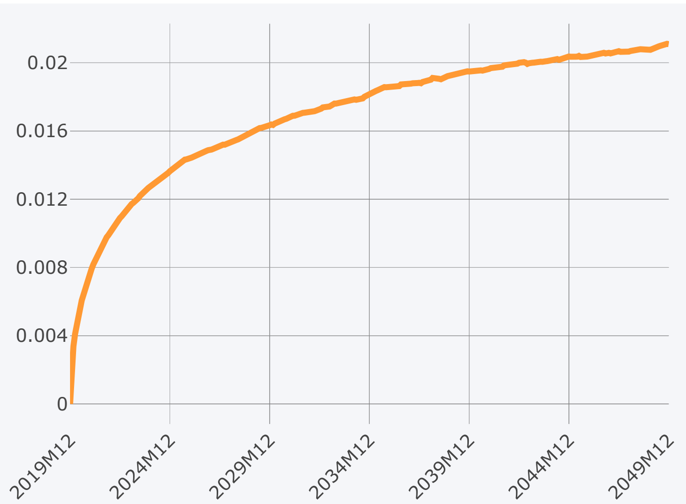
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

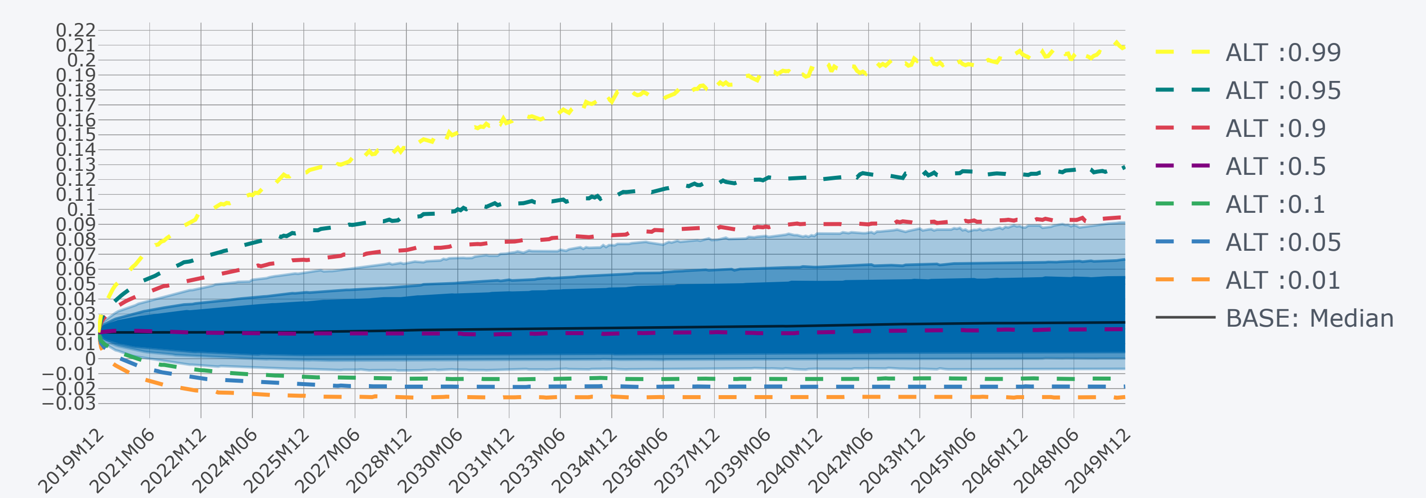
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0171	0.0268	0.019	0.0315
std	0.0077	0.0211	0.0164	0.05
min	-0.0098	-0.0233	-0.0289	-0.038
1%	0.0005	-0.0087	-0.0134	-0.029
5%	0.005	-0.0014	-0.0057	-0.0214
10%	0.0074	0.0032	-0.0012	-0.0157
50%	0.0168	0.0237	0.0176	0.0187
90%	0.0269	0.0544	0.0405	0.0941
95%	0.03	0.0664	0.0477	0.1287
99%	0.0357	0.0911	0.0618	0.2088
max	0.0535	0.1692	0.101	0.4985

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 6 Year Yield - Coupon



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

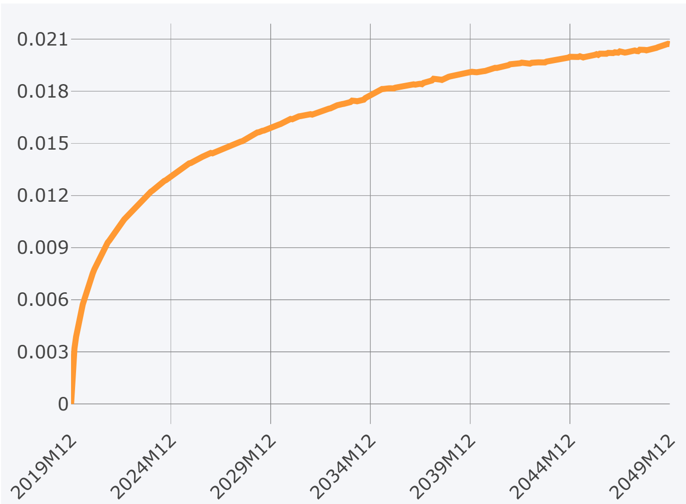
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

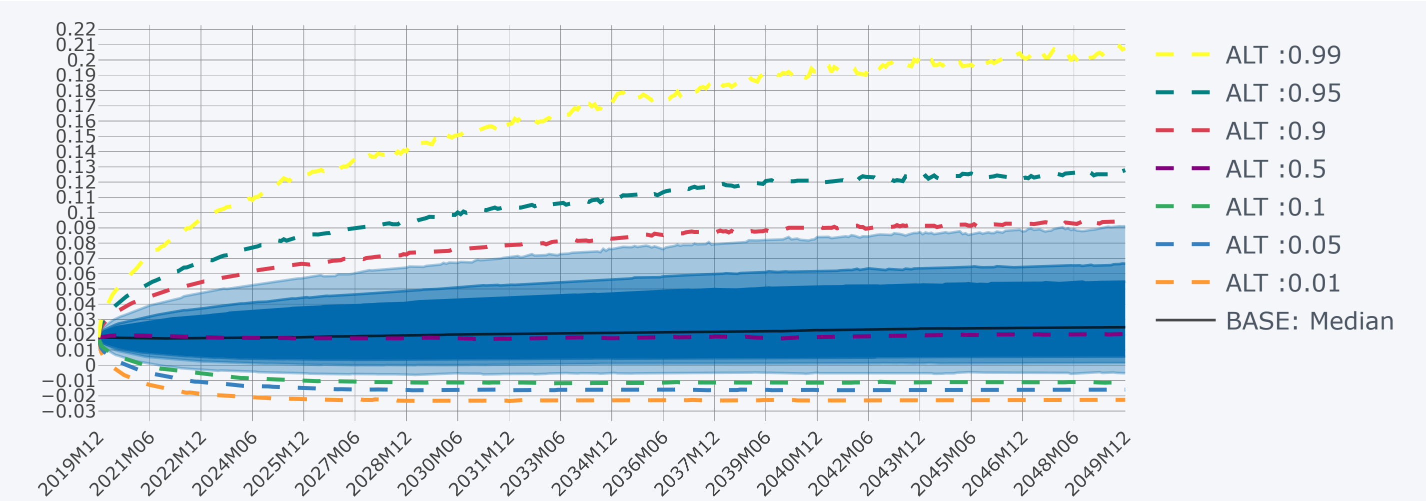
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0176	0.0276	0.02	0.0327
std	0.0073	0.0207	0.0158	0.0492
min	-0.0077	-0.0202	-0.0253	-0.0337
1%	0.0019	-0.0068	-0.0108	-0.0256
5%	0.0061	0.0002	-0.0035	-0.0185
10%	0.0084	0.0045	0.0007	-0.0133
50%	0.0173	0.0243	0.0187	0.0198
90%	0.0269	0.0545	0.0407	0.0943
95%	0.0298	0.0666	0.0478	0.1285
99%	0.0351	0.0913	0.0615	0.209
max	0.0518	0.1689	0.0976	0.4968

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 7 Year Yield - Coupon



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

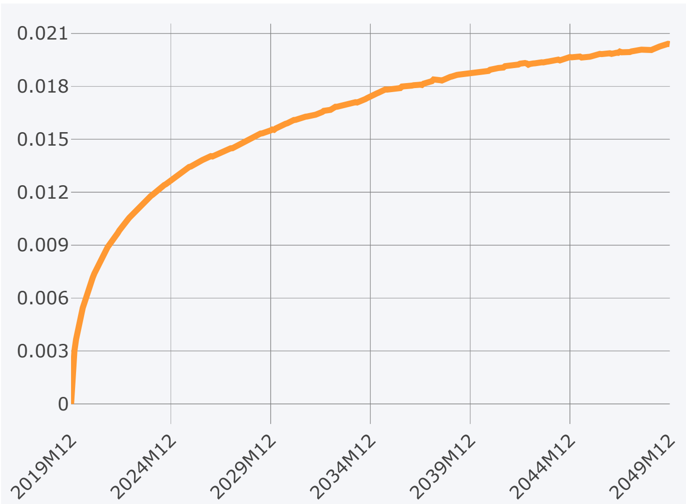
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

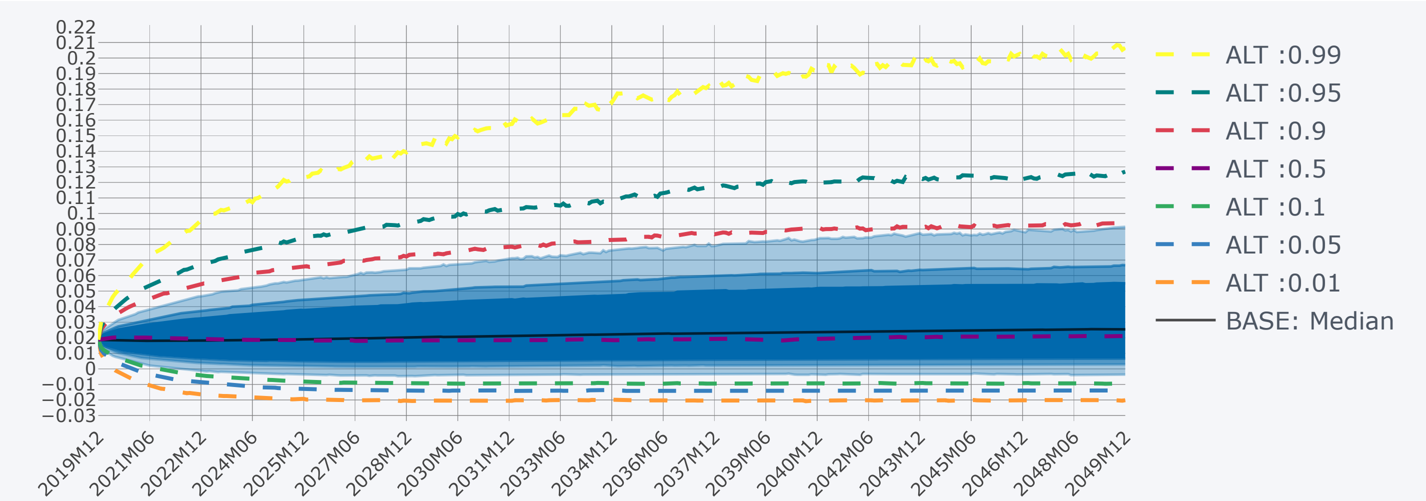
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.018	0.0282	0.0209	0.0336
std	0.0069	0.0204	0.0152	0.0485
min	-0.0059	-0.0174	-0.0222	-0.03
1%	0.0032	-0.0052	-0.0089	-0.0226
5%	0.0072	0.0015	-0.0017	-0.016
10%	0.0093	0.0057	0.0023	-0.0112
50%	0.0178	0.0249	0.0195	0.0205
90%	0.027	0.0548	0.0409	0.0943
95%	0.0297	0.0666	0.048	0.1278
99%	0.0348	0.0912	0.061	0.2077
max	0.0504	0.1686	0.0946	0.4954

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 8 Year Yield - Coupon



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

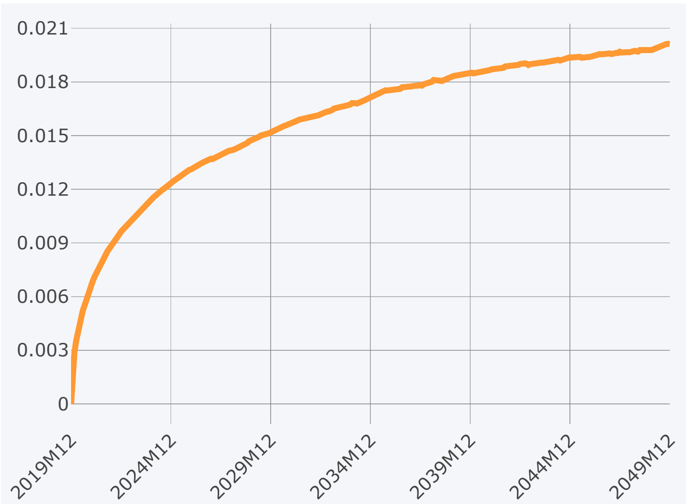
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

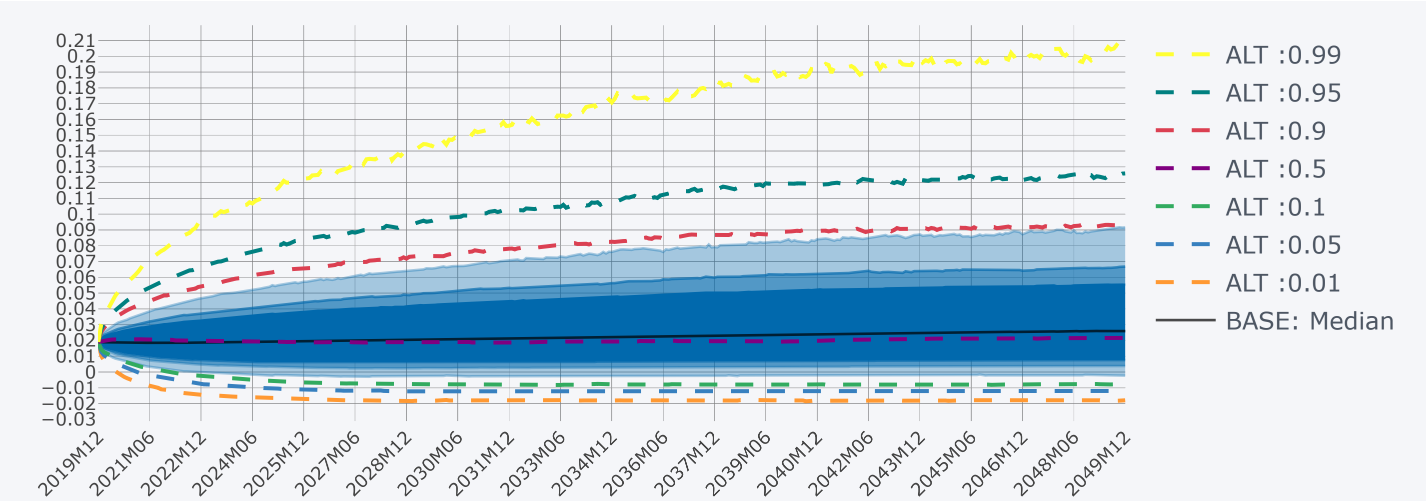
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0184	0.0289	0.0216	0.0343
std	0.0066	0.0201	0.0147	0.0477
min	-0.0043	-0.015	-0.0195	-0.0269
1%	0.0044	-0.0037	-0.007	-0.0201
5%	0.0081	0.0028	-0.0002	-0.0139
10%	0.0101	0.0066	0.0037	-0.0094
50%	0.0182	0.0254	0.0203	0.0211
90%	0.027	0.055	0.0409	0.0939
95%	0.0297	0.0667	0.0477	0.1269
99%	0.0347	0.0914	0.0606	0.2066
max	0.0492	0.1684	0.0919	0.494

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 9 Year Yield - Coupon



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

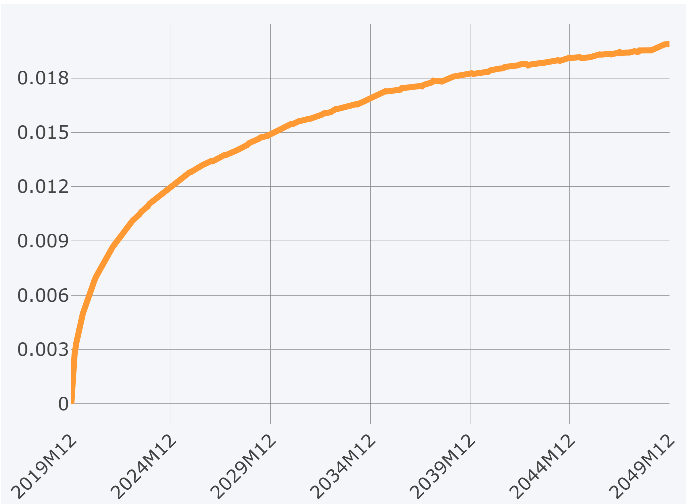
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

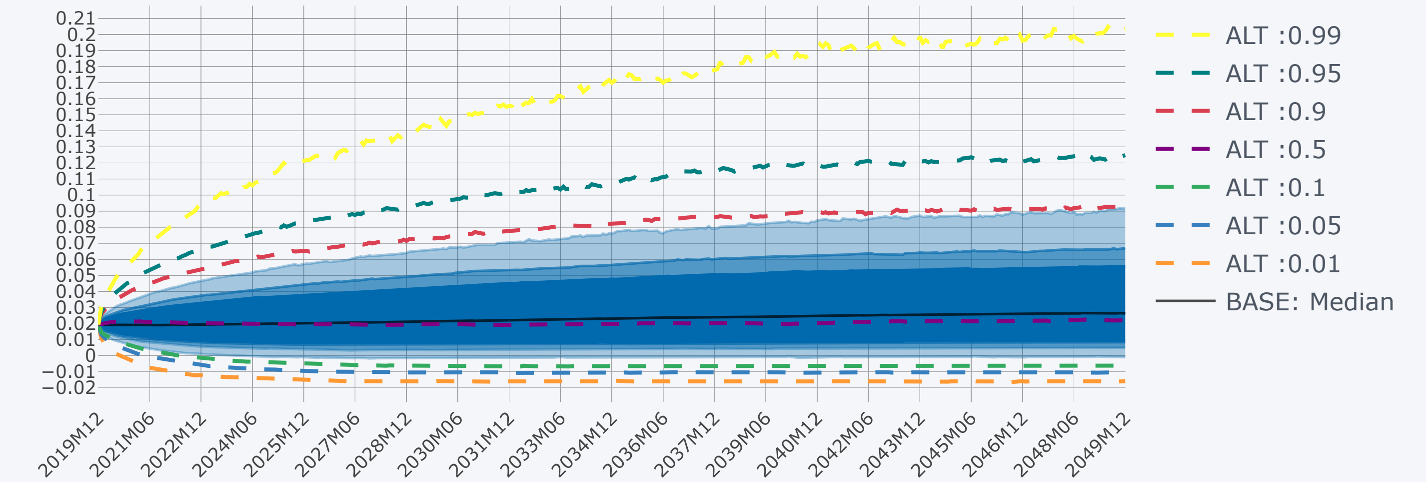
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0189	0.0294	0.0221	0.0349
std	0.0064	0.0199	0.0142	0.047
min	-0.0029	-0.0128	-0.0171	-0.0241
1%	0.0053	-0.0023	-0.0054	-0.0179
5%	0.0089	0.0038	0.0011	-0.012
10%	0.0109	0.0076	0.0049	-0.0077
50%	0.0186	0.0259	0.0208	0.0216
90%	0.0272	0.0552	0.0409	0.0934
95%	0.0297	0.0668	0.0476	0.1258
99%	0.0347	0.0916	0.06	0.2051
max	0.0481	0.1681	0.0915	0.4929

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 10 Year Yield - Coupon



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

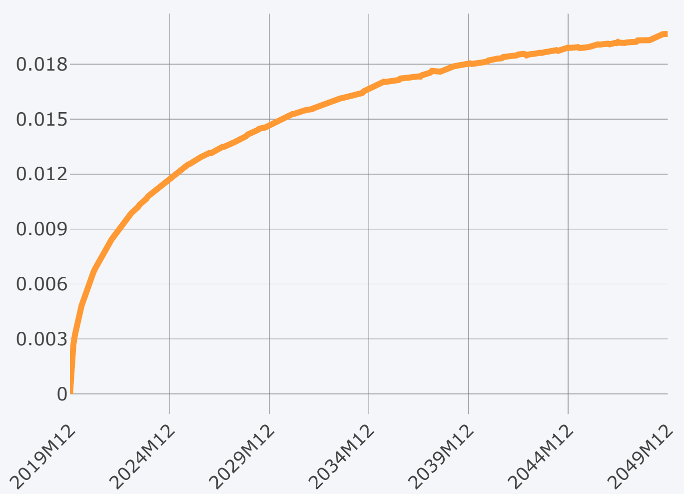
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

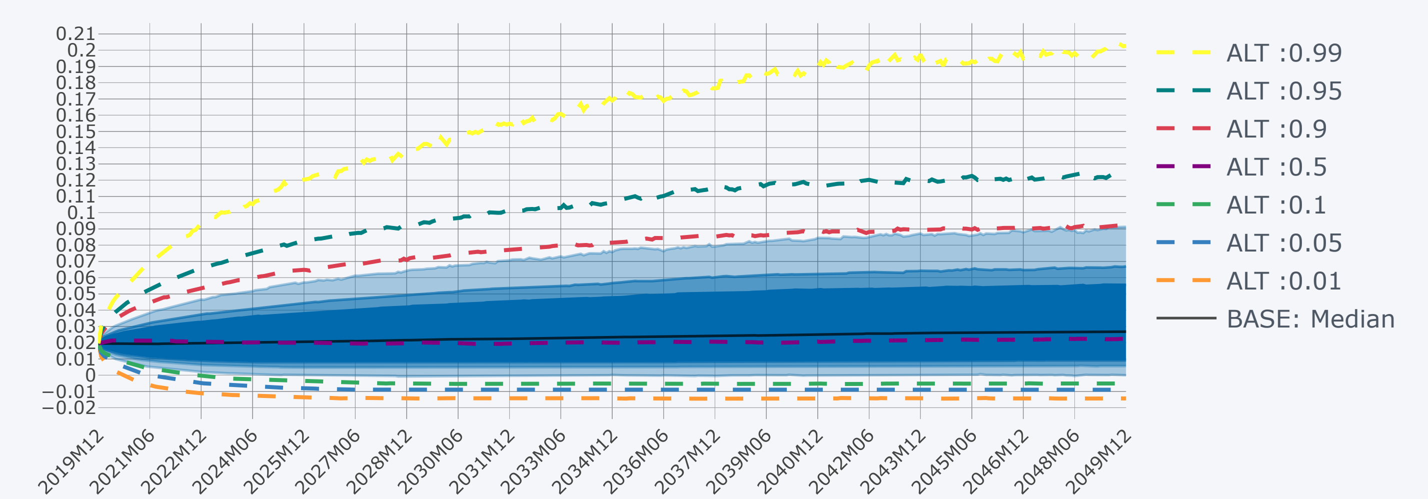
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0192	0.0299	0.0226	0.0353
std	0.0062	0.0196	0.0138	0.0464
min	-0.0016	-0.0109	-0.015	-0.0217
1%	0.0062	-0.001	-0.0041	-0.0159
5%	0.0097	0.0048	0.0022	-0.0104
10%	0.0115	0.0083	0.0059	-0.0063
50%	0.0189	0.0263	0.0212	0.0219
90%	0.0273	0.0554	0.0409	0.093
95%	0.0297	0.0669	0.0474	0.1248
99%	0.0346	0.0915	0.0595	0.2035
max	0.0473	0.1678	0.091	0.492

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 11 Year Yield - Coupon



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

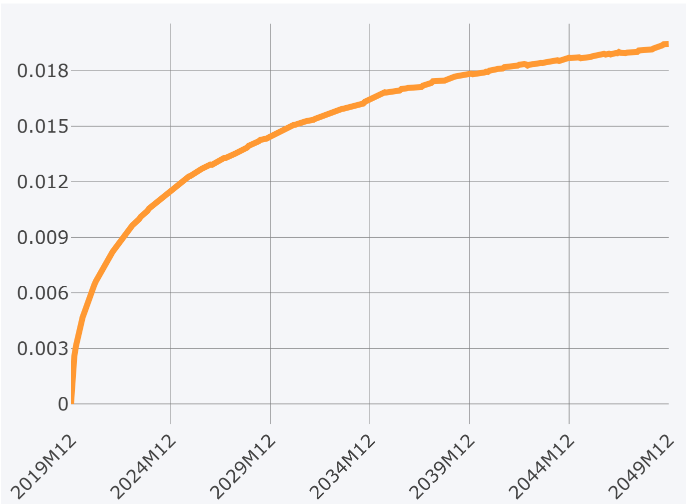
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

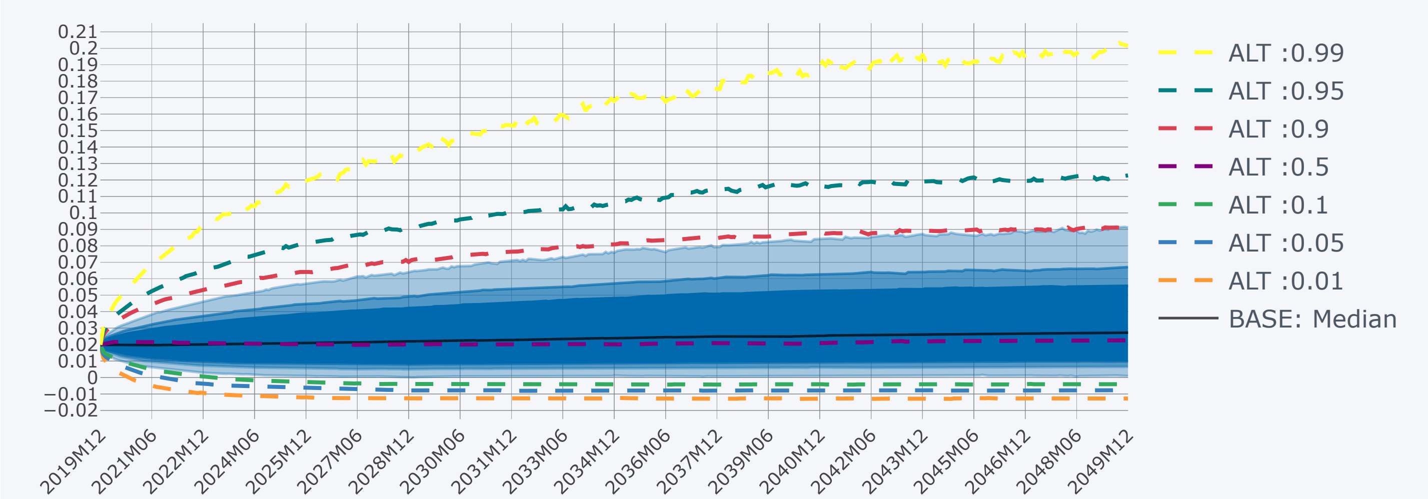
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0196	0.0303	0.0229	0.0356
std	0.006	0.0194	0.0135	0.0458
min	-0.0004	-0.0092	-0.0132	-0.0196
1%	0.0071	0	-0.0028	-0.0143
5%	0.0103	0.0057	0.0031	-0.0089
10%	0.0122	0.0091	0.0067	-0.0051
50%	0.0193	0.0268	0.0215	0.0223
90%	0.0274	0.0556	0.0407	0.0926
95%	0.0298	0.067	0.047	0.1239
99%	0.0346	0.0913	0.059	0.2026
max	0.0465	0.1675	0.0904	0.4912

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 12 Year Yield - Coupon



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

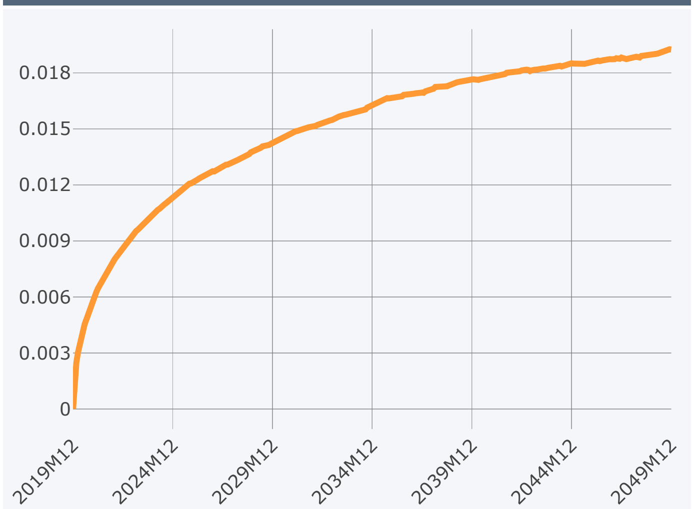
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.02	0.0308	0.0231	0.0358
std	0.0058	0.0193	0.0131	0.0452
min	0.0007	-0.0076	-0.0116	-0.0177
1%	0.0078	0.0009	-0.0017	-0.0128
5%	0.011	0.0065	0.0039	-0.0077
10%	0.0127	0.0098	0.0074	-0.0041
50%	0.0197	0.0272	0.0218	0.0226
90%	0.0276	0.0557	0.0405	0.0919
95%	0.03	0.0671	0.0466	0.1228
99%	0.0346	0.0911	0.0583	0.2014
max	0.0459	0.1673	0.0897	0.4905

Cross Sectional Volatility Over Time : BASE



US Treasury 13 Year Yield - Coupon
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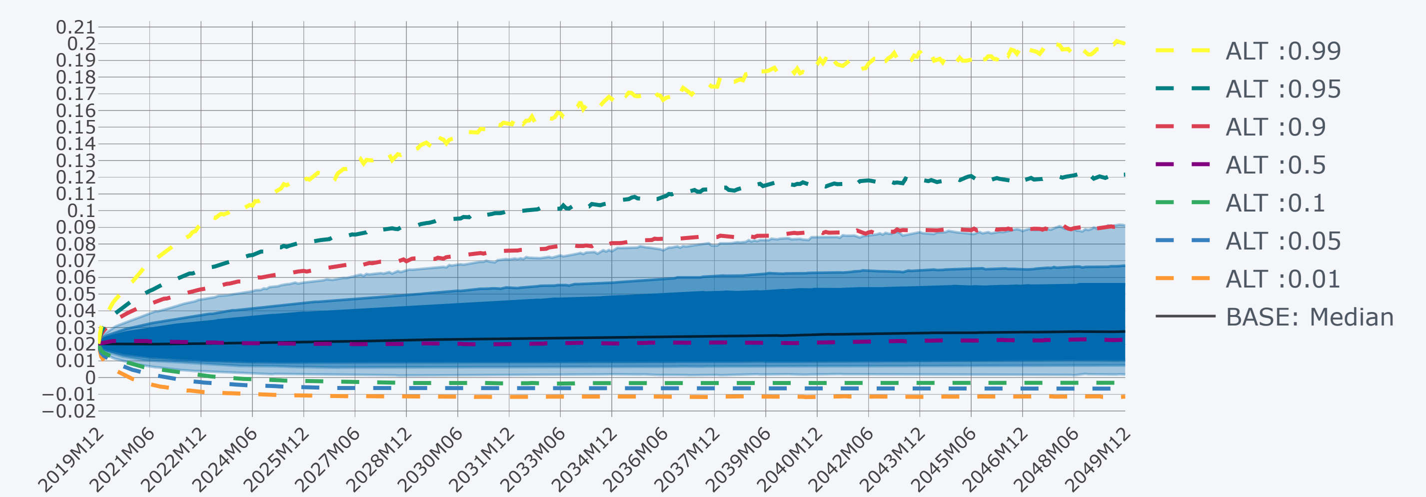
Simulated Data in Percentiles : US Treasury 13 Year Yield - Coupon



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

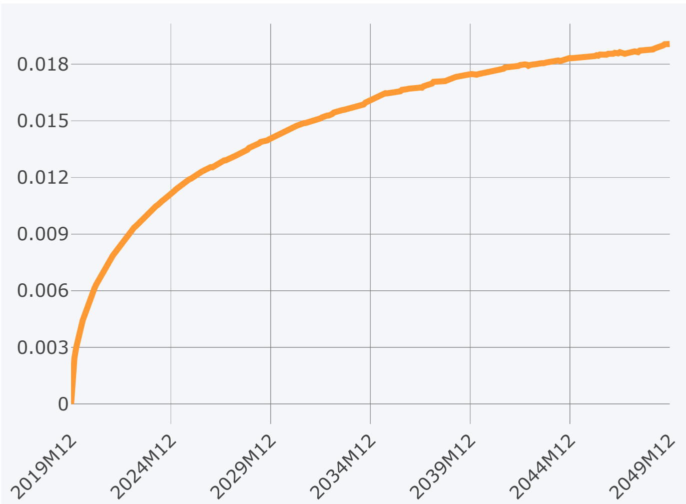
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

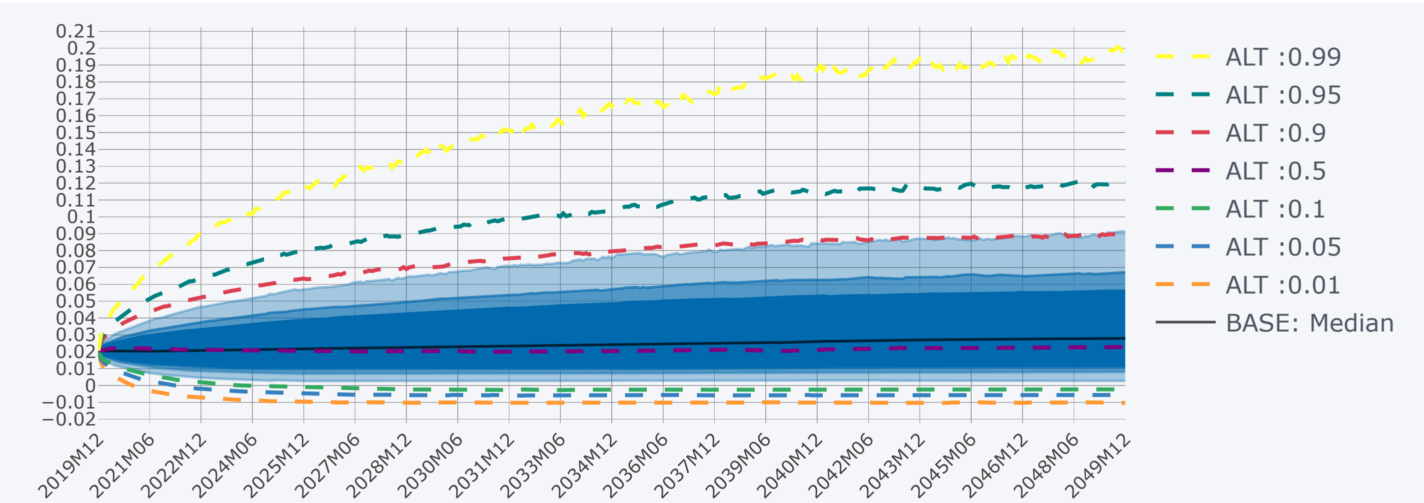
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0203	0.0311	0.0233	0.0359
std	0.0057	0.0191	0.0128	0.0446
min	0.0017	-0.0062	-0.0101	-0.016
1%	0.0085	0.0018	-0.0008	-0.0114
5%	0.0115	0.0072	0.0046	-0.0066
10%	0.0132	0.0105	0.008	-0.0031
50%	0.02	0.0276	0.022	0.0227
90%	0.0277	0.0559	0.0403	0.0912
95%	0.0301	0.0671	0.0463	0.1216
99%	0.0347	0.0911	0.0576	0.2
max	0.0454	0.167	0.089	0.4899

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 14 Year Yield - Coupon



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

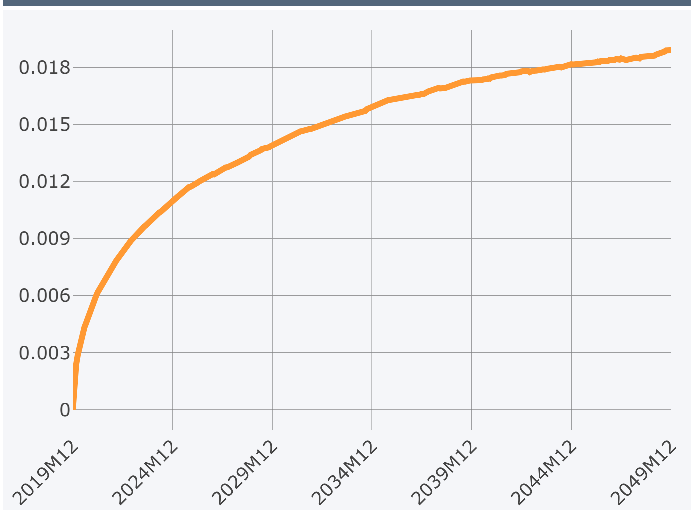
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

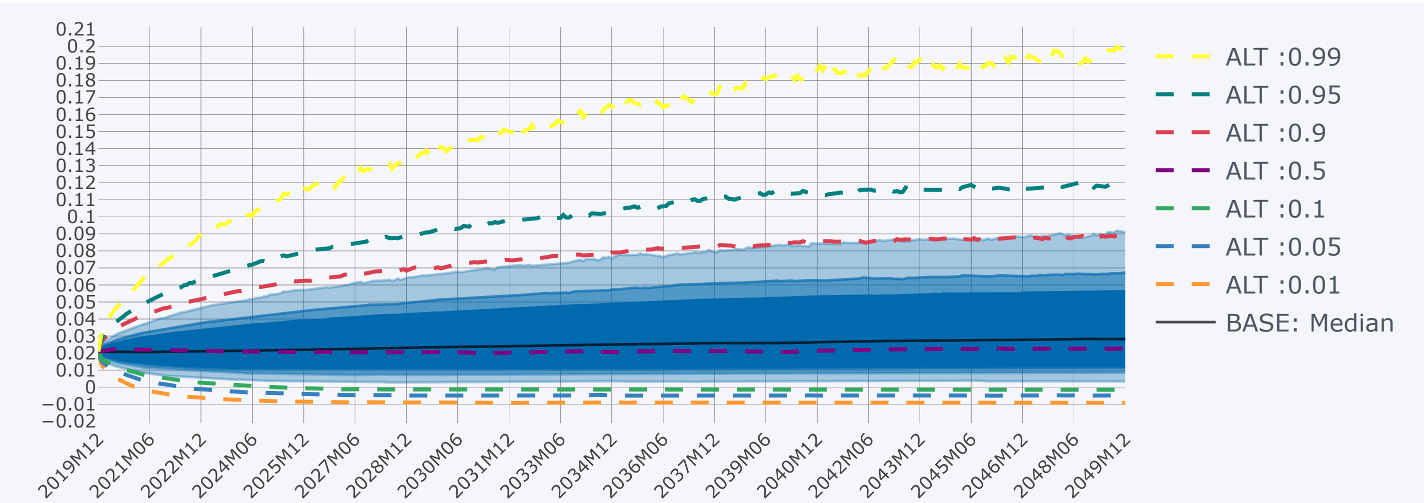
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0207	0.0315	0.0234	0.0359
std	0.0056	0.0189	0.0125	0.0441
min	0.0026	-0.0049	-0.0088	-0.0145
1%	0.009	0.0027	0	-0.0102
5%	0.0121	0.0079	0.0053	-0.0056
10%	0.0137	0.011	0.0086	-0.0023
50%	0.0203	0.0279	0.0221	0.0228
90%	0.0279	0.0561	0.04	0.0902
95%	0.0302	0.0672	0.0458	0.1205
99%	0.0347	0.0911	0.057	0.1986
max	0.0449	0.1667	0.0882	0.4894

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 15 Year Yield - Coupon



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

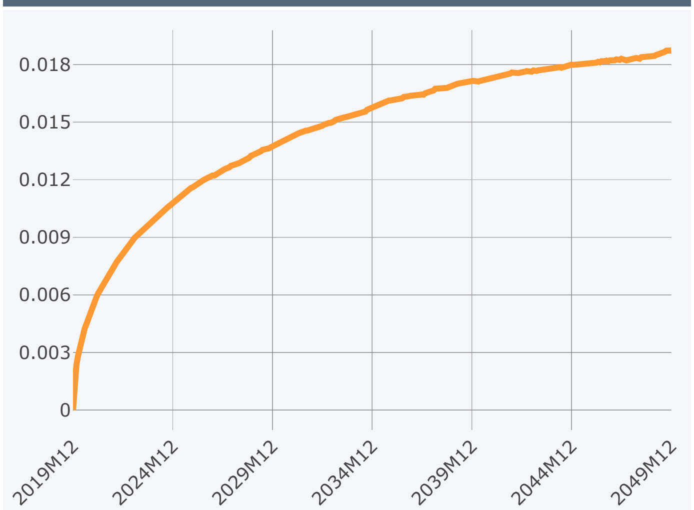
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

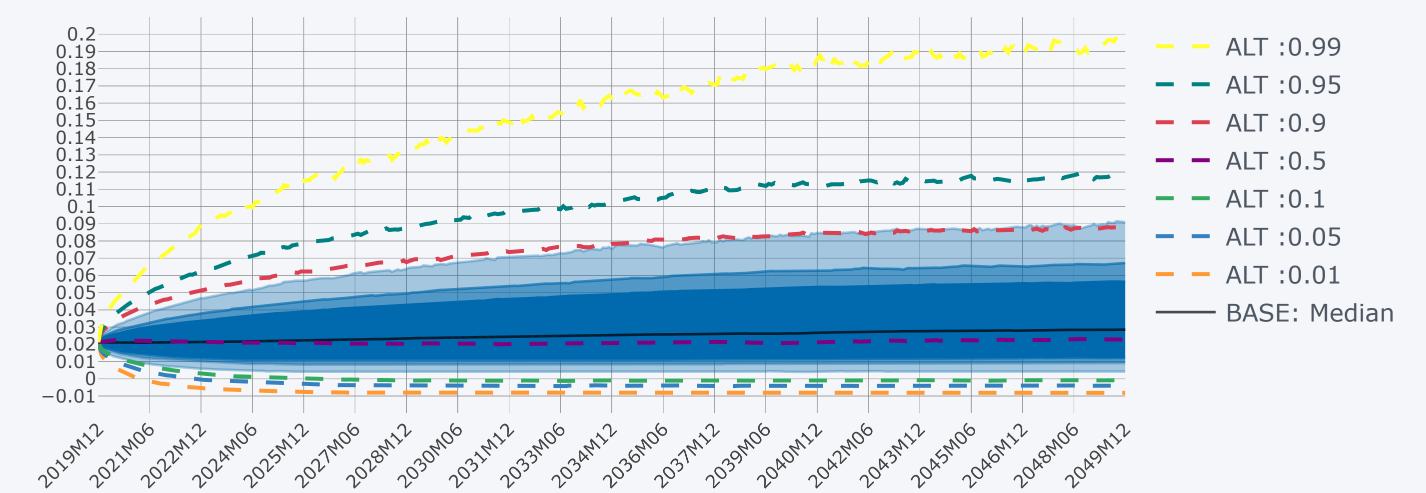
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.021	0.0318	0.0235	0.0359
std	0.0054	0.0187	0.0122	0.0436
min	0.0034	-0.0038	-0.0077	-0.0131
1%	0.0096	0.0034	0.0007	-0.0092
5%	0.0126	0.0085	0.0058	-0.0047
10%	0.0142	0.0116	0.009	-0.0015
50%	0.0206	0.0282	0.0222	0.0228
90%	0.0281	0.0562	0.0397	0.0893
95%	0.0304	0.0673	0.0454	0.1196
99%	0.0347	0.091	0.0565	0.1976
max	0.0445	0.1665	0.0874	0.489

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 16 Year Yield - Coupon



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

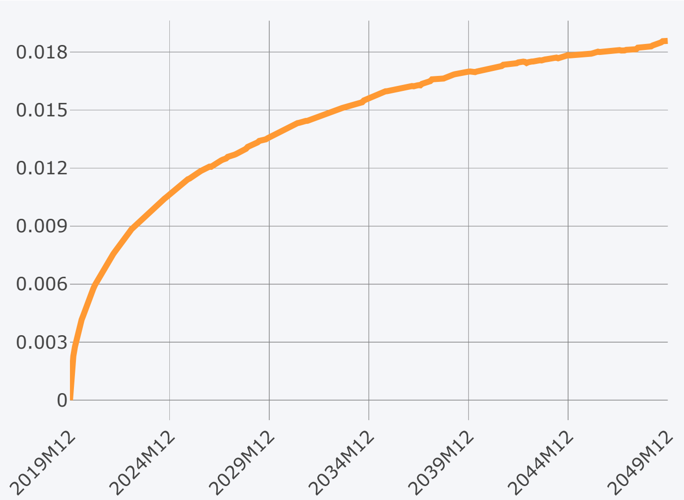
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0213	0.0321	0.0236	0.0359
std	0.0053	0.0186	0.0119	0.0431
min	0.0042	-0.0027	-0.0066	-0.0119
1%	0.0102	0.0042	0.0013	-0.0082
5%	0.013	0.0091	0.0063	-0.004
10%	0.0146	0.0121	0.0094	-0.0008
50%	0.0209	0.0285	0.0223	0.0228
90%	0.0283	0.0563	0.0394	0.0884
95%	0.0305	0.0672	0.045	0.1186
99%	0.0348	0.0909	0.0559	0.1967
max	0.0446	0.1662	0.0866	0.4887

Cross Sectional Volatility Over Time : BASE



US Treasury 17 Year Yield - Coupon

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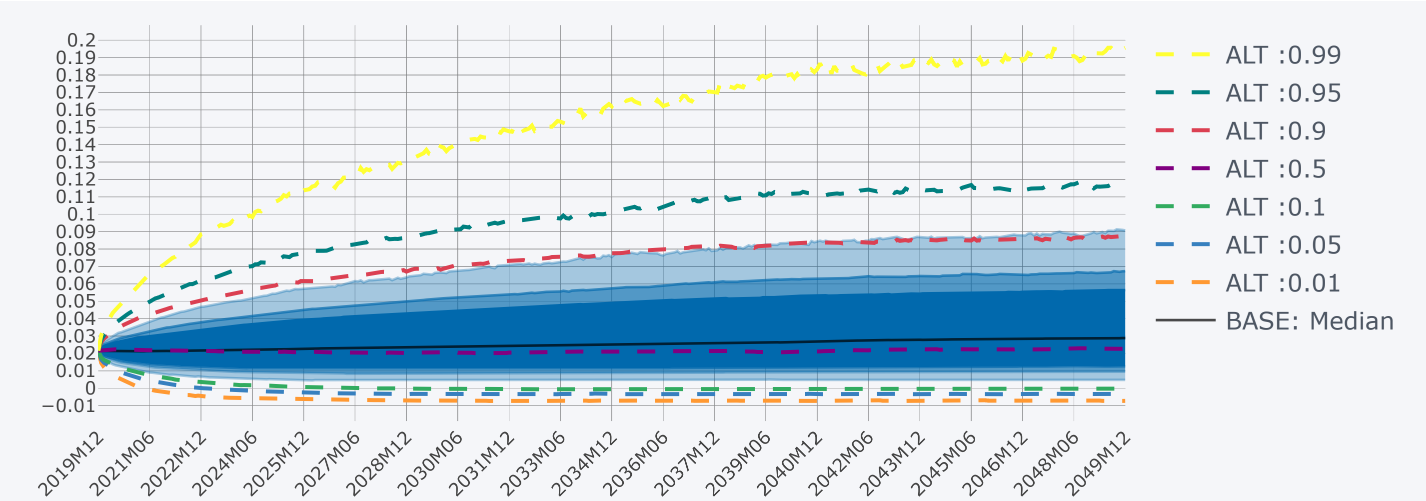
Simulated Data in Percentiles : US Treasury 17 Year Yield - Coupon



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

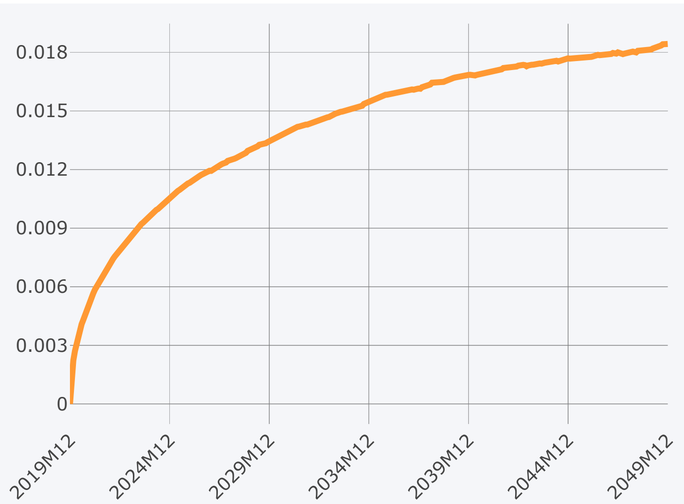
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0216	0.0324	0.0235	0.0358
std	0.0053	0.0184	0.0116	0.0427
min	0.005	-0.0017	-0.0057	-0.0108
1%	0.0107	0.0048	0.0019	-0.0073
5%	0.0135	0.0095	0.0067	-0.0032
10%	0.015	0.0126	0.0097	-0.0002
50%	0.0212	0.0288	0.0223	0.0228
90%	0.0285	0.0564	0.0391	0.0876
95%	0.0307	0.0673	0.0445	0.1173
99%	0.0349	0.0907	0.0553	0.1956
max	0.0448	0.166	0.0858	0.4884

Cross Sectional Volatility Over Time : BASE



US Treasury 18 Year Yield - Coupon

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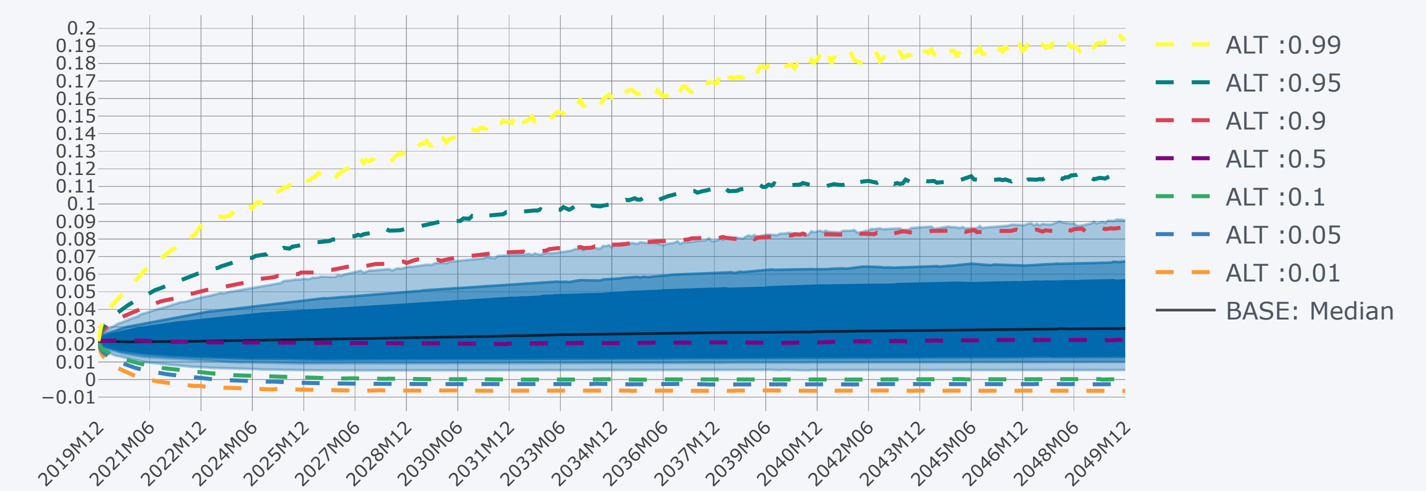
Validation Report

Simulated Data in Percentiles : US Treasury 18 Year Yield - Coupon



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

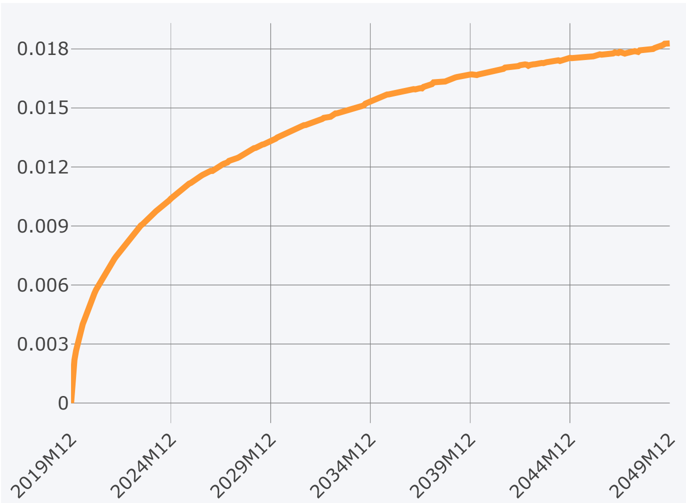
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

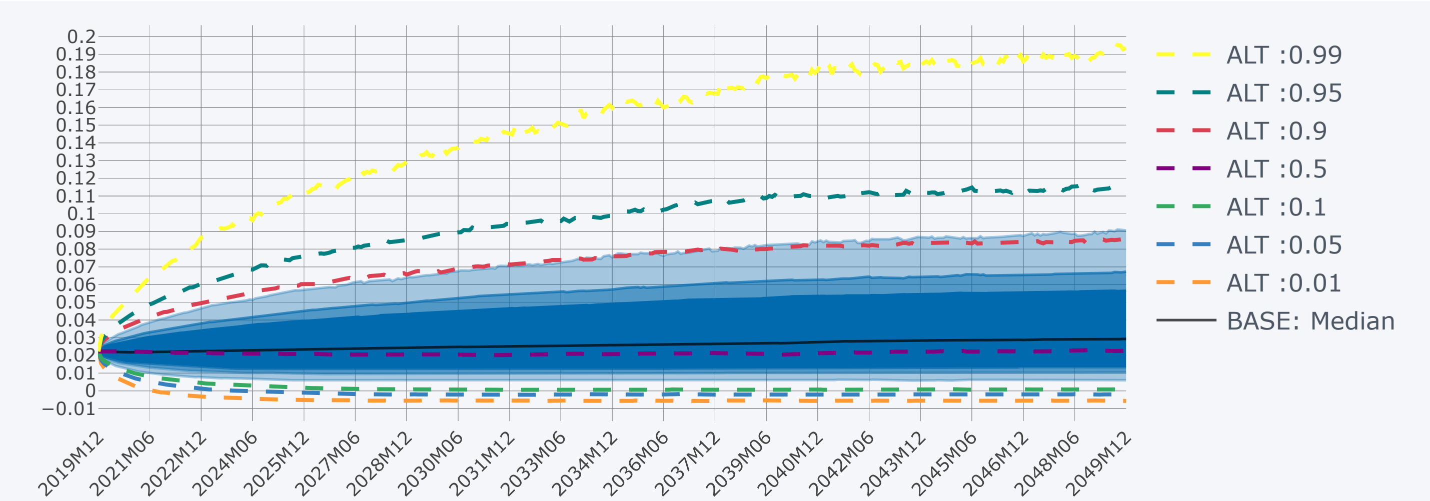
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0218	0.0326	0.0235	0.0357
std	0.0052	0.0183	0.0114	0.0422
min	0.0056	-0.0008	-0.0048	-0.0098
1%	0.0112	0.0054	0.0025	-0.0064
5%	0.0139	0.01	0.0071	-0.0026
10%	0.0154	0.013	0.01	0.0003
50%	0.0215	0.0291	0.0223	0.0227
90%	0.0286	0.0565	0.0387	0.0868
95%	0.0308	0.0673	0.0441	0.1164
99%	0.035	0.0906	0.0547	0.1944
max	0.0449	0.1657	0.0849	0.4881

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 19 Year Yield - Coupon



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

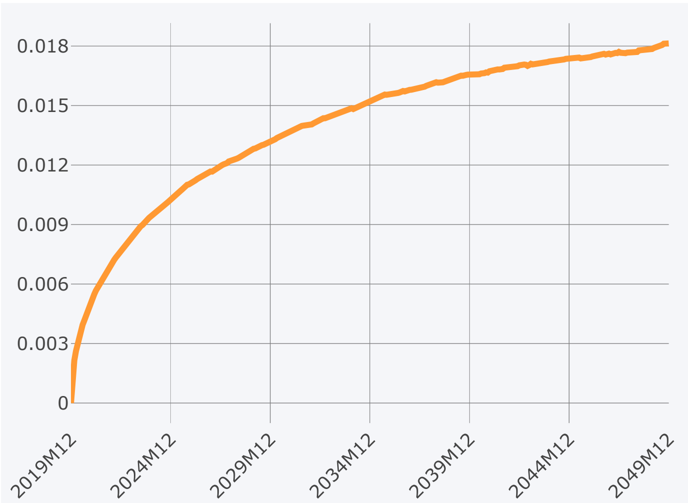
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

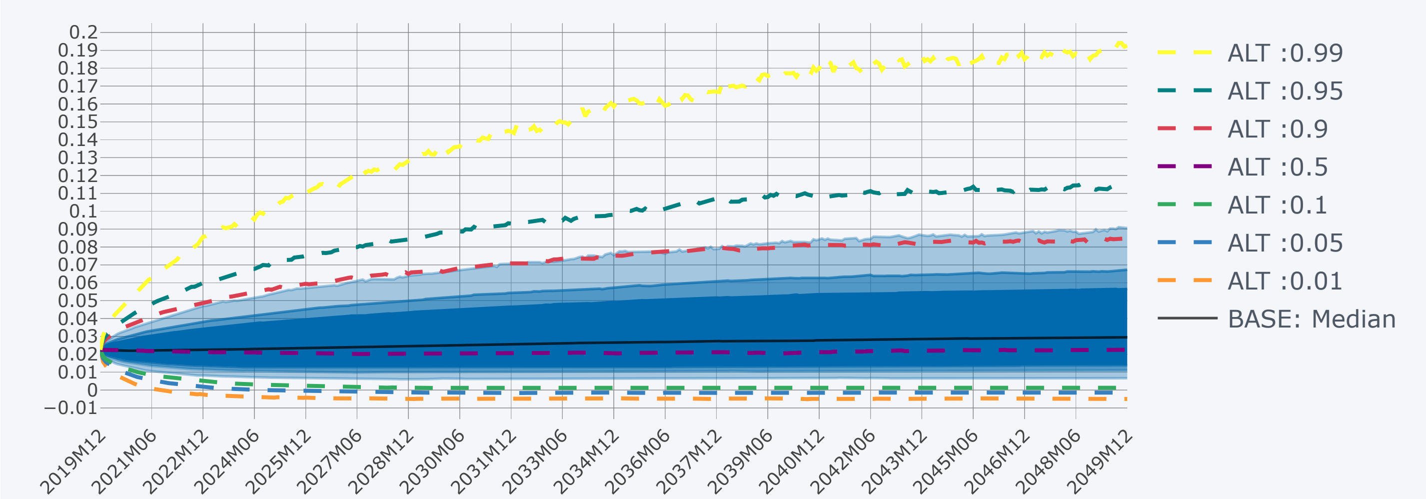
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0221	0.0328	0.0235	0.0356
std	0.0051	0.0181	0.0111	0.0418
min	0.0063	0.0001	-0.004	-0.0088
1%	0.0116	0.006	0.003	-0.0057
5%	0.0143	0.0104	0.0075	-0.002
10%	0.0158	0.0134	0.0103	0.0008
50%	0.0218	0.0293	0.0222	0.0226
90%	0.0288	0.0565	0.0383	0.0858
95%	0.0309	0.0673	0.0435	0.1154
99%	0.035	0.0906	0.054	0.1935
max	0.0449	0.1655	0.0841	0.4879

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 20 Year Yield - Coupon



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

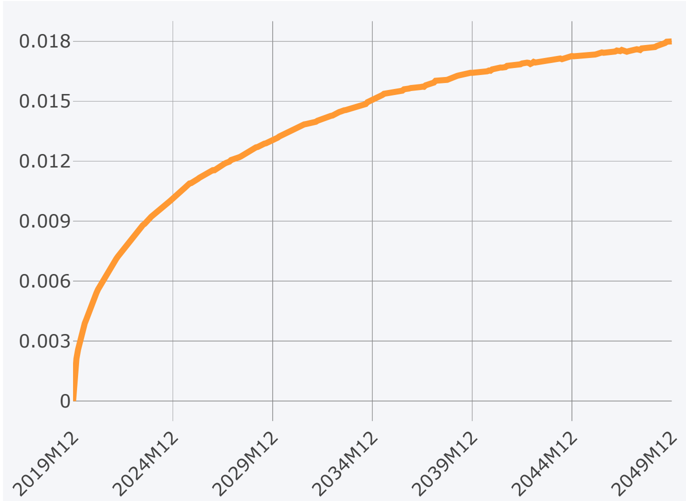
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

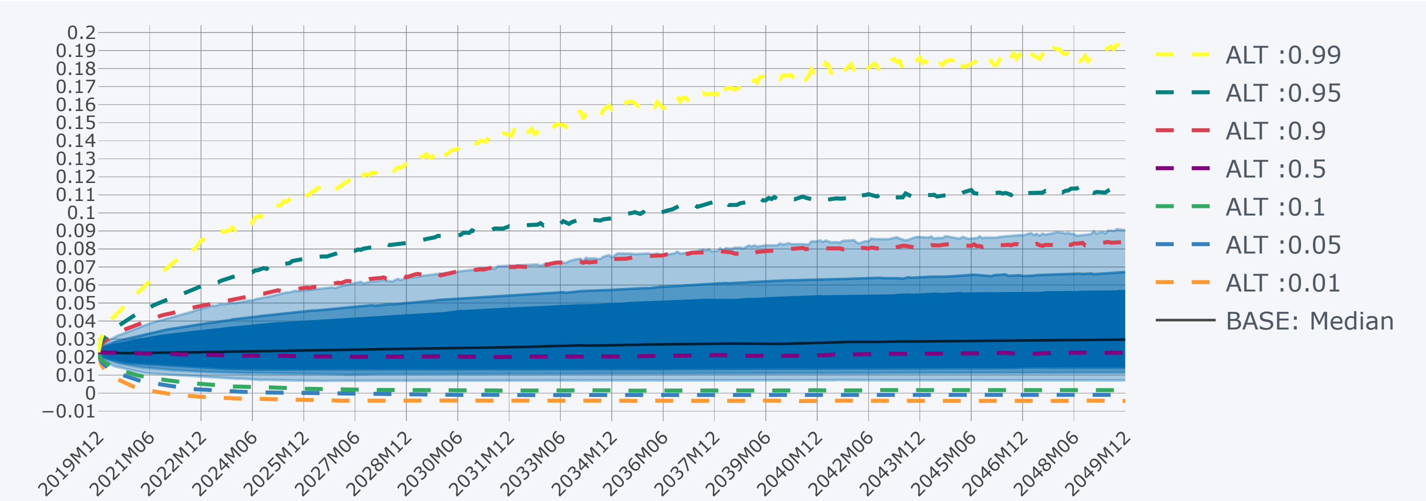
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0223	0.0331	0.0234	0.0354
std	0.005	0.018	0.0109	0.0414
min	0.0069	0.0009	-0.0033	-0.008
1%	0.012	0.0066	0.0035	-0.005
5%	0.0147	0.0109	0.0079	-0.0014
10%	0.0162	0.0139	0.0105	0.0013
50%	0.022	0.0295	0.0222	0.0225
90%	0.0289	0.0565	0.0379	0.0849
95%	0.0311	0.0673	0.0431	0.1145
99%	0.0351	0.0906	0.0534	0.1926
max	0.045	0.1653	0.0832	0.4877

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 21 Year Yield - Coupon



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

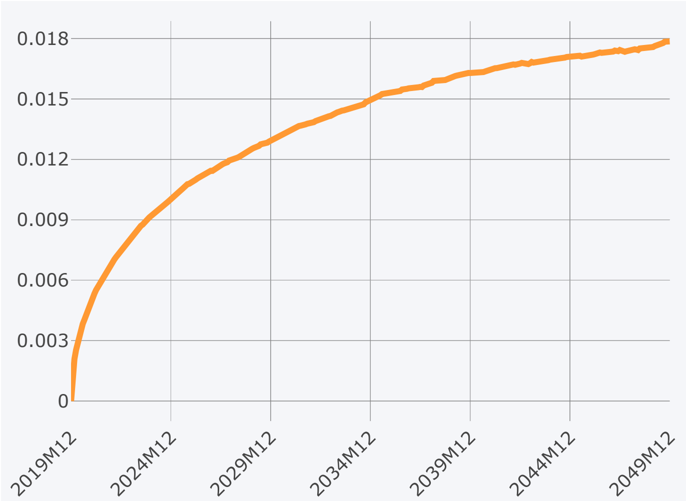
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

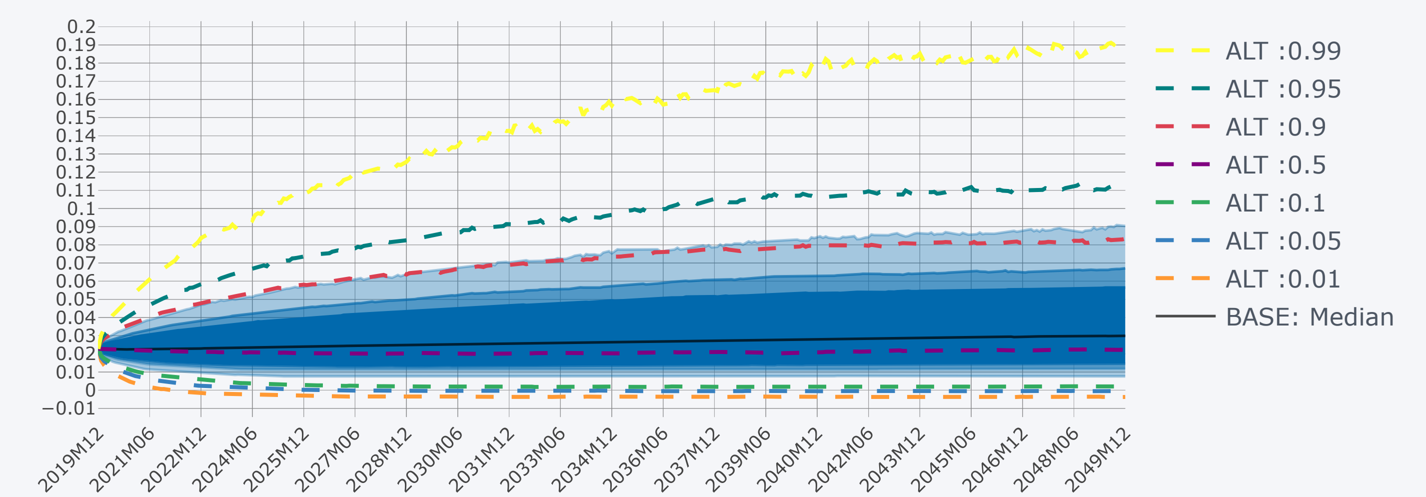
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0226	0.0333	0.0233	0.0353
std	0.0049	0.0179	0.0107	0.0411
min	0.0074	0.0016	-0.0027	-0.0072
1%	0.0124	0.0071	0.0039	-0.0043
5%	0.015	0.0113	0.0082	-0.0009
10%	0.0165	0.0142	0.0107	0.0017
50%	0.0222	0.0297	0.0221	0.0224
90%	0.0291	0.0565	0.0375	0.0841
95%	0.0312	0.0672	0.0425	0.1136
99%	0.0351	0.0905	0.0528	0.1917
max	0.0451	0.1651	0.0824	0.4875

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 22 Year Yield - Coupon



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

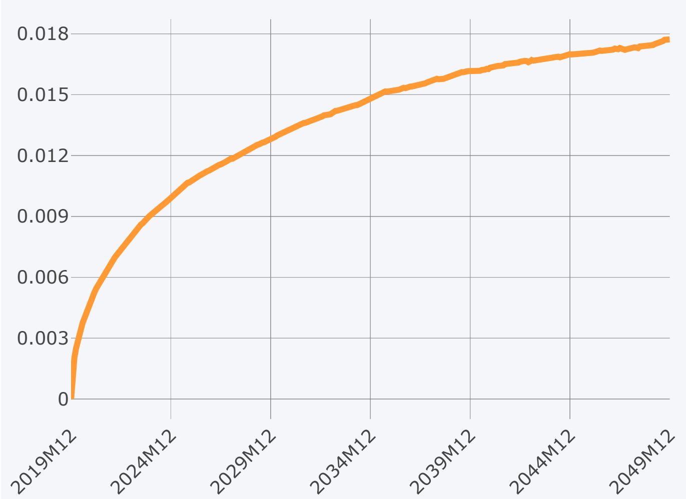
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

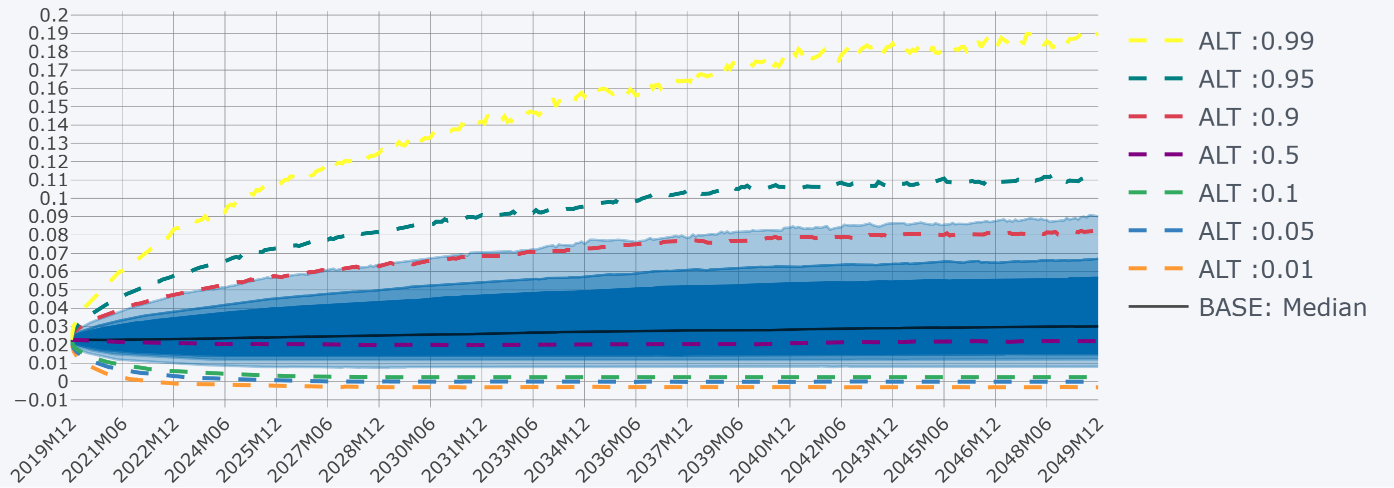
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0228	0.0334	0.0232	0.0351
std	0.0049	0.0177	0.0105	0.0407
min	0.008	0.0023	-0.0021	-0.0065
1%	0.0128	0.0076	0.0043	-0.0037
5%	0.0153	0.0117	0.0084	-0.0004
10%	0.0168	0.0146	0.0109	0.0021
50%	0.0225	0.0299	0.022	0.0223
90%	0.0292	0.0565	0.0371	0.0834
95%	0.0313	0.0671	0.0421	0.1127
99%	0.0352	0.0904	0.0523	0.1908
max	0.0451	0.1649	0.0816	0.4874

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 23 Year Yield - Coupon



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

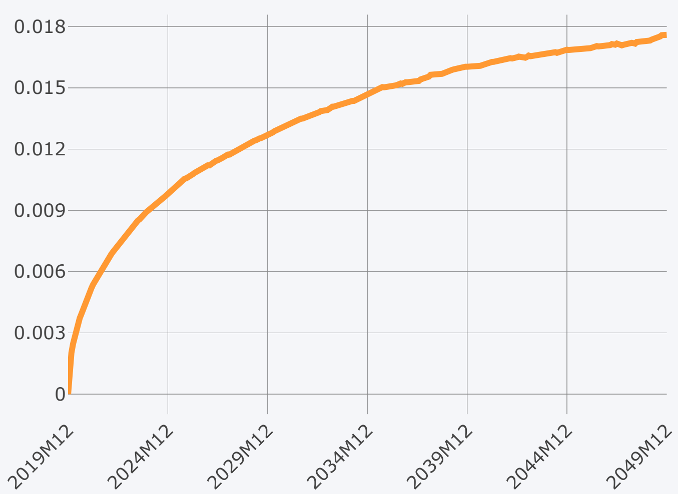
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

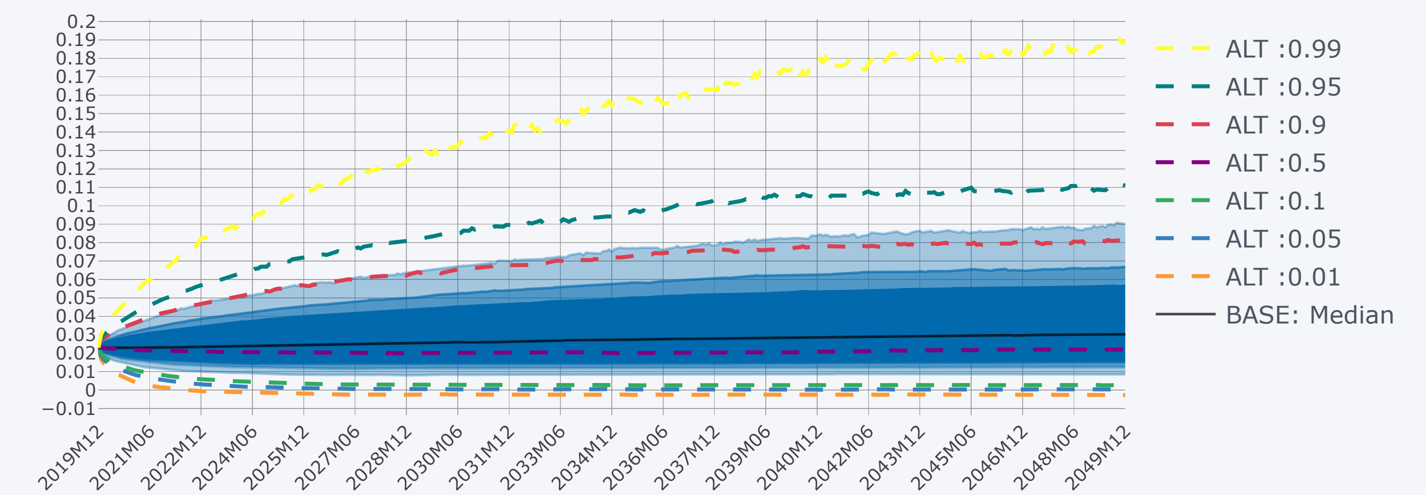
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.023	0.0336	0.0231	0.0349
std	0.0048	0.0176	0.0103	0.0403
min	0.0085	0.003	-0.0015	-0.0058
1%	0.0132	0.0081	0.0046	-0.0032
5%	0.0157	0.0121	0.0086	0
10%	0.0171	0.0149	0.011	0.0024
50%	0.0227	0.0301	0.0219	0.0221
90%	0.0293	0.0566	0.0367	0.0826
95%	0.0314	0.067	0.0416	0.1119
99%	0.0352	0.0902	0.0517	0.1901
max	0.0451	0.1647	0.0808	0.4872

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 24 Year Yield - Coupon



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

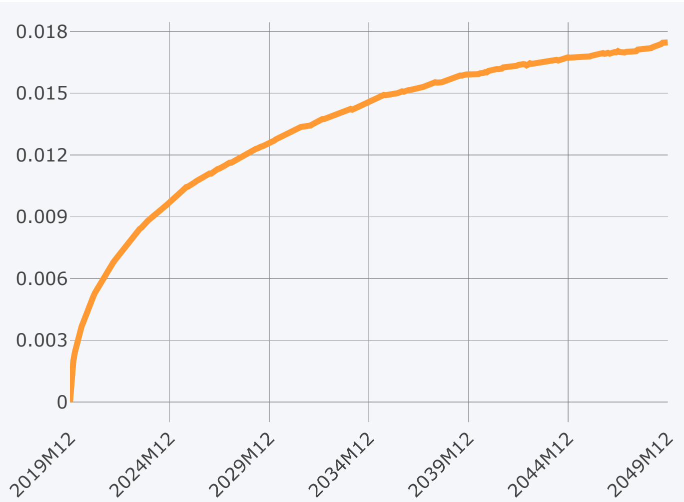
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

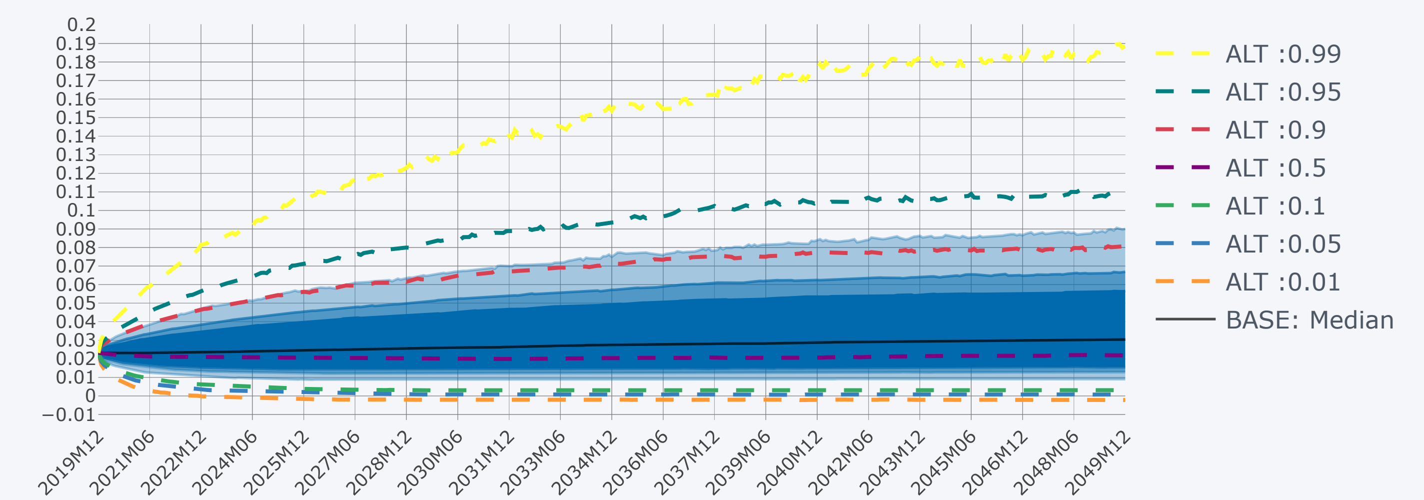
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0232	0.0338	0.0229	0.0348
std	0.0047	0.0175	0.0101	0.04
min	0.0089	0.0036	-0.001	-0.0052
1%	0.0135	0.0085	0.0048	-0.0027
5%	0.016	0.0124	0.0088	0.0004
10%	0.0174	0.0152	0.0111	0.0028
50%	0.0229	0.0302	0.0217	0.022
90%	0.0295	0.0566	0.0363	0.0817
95%	0.0315	0.0669	0.0411	0.1109
99%	0.0353	0.0901	0.0511	0.1893
max	0.0452	0.1645	0.08	0.4871

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 25 Year Yield - Coupon



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

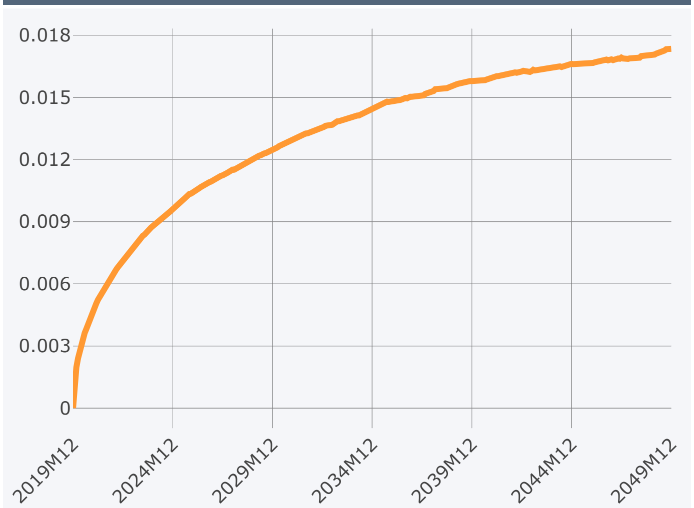
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

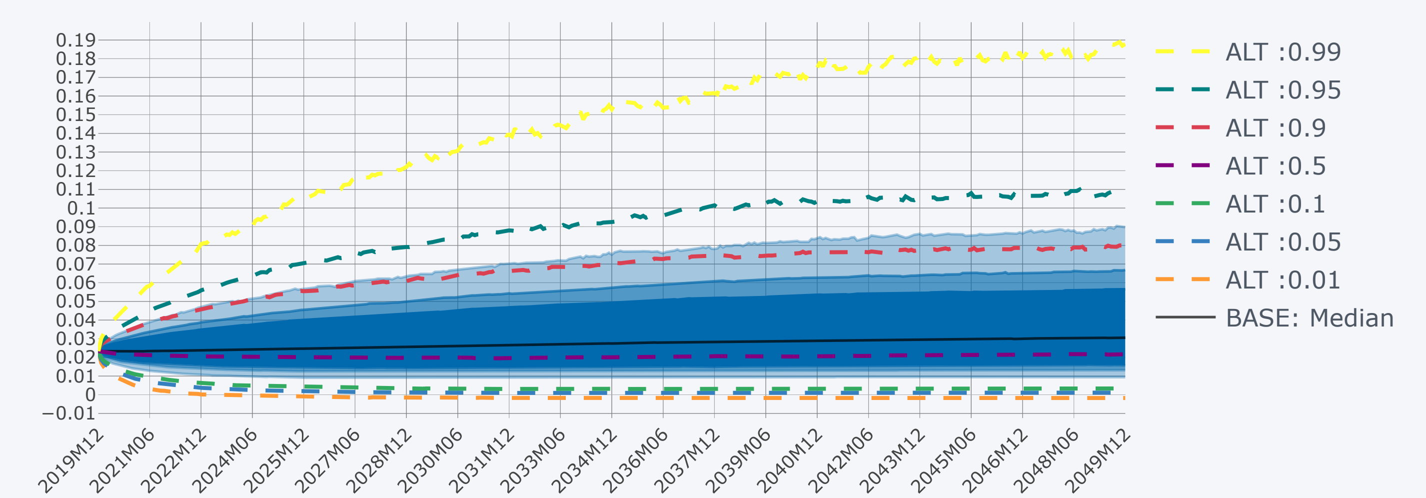
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0234	0.0339	0.0228	0.0346
std	0.0047	0.0173	0.0099	0.0397
min	0.0094	0.0042	-0.0006	-0.0046
1%	0.0138	0.009	0.0051	-0.0022
5%	0.0163	0.0128	0.009	0.0008
10%	0.0176	0.0155	0.0113	0.0031
50%	0.0231	0.0304	0.0216	0.0218
90%	0.0296	0.0565	0.0359	0.081
95%	0.0316	0.0669	0.0407	0.11
99%	0.0354	0.09	0.0506	0.1886
max	0.0452	0.1644	0.0792	0.487

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 26 Year Yield - Coupon



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

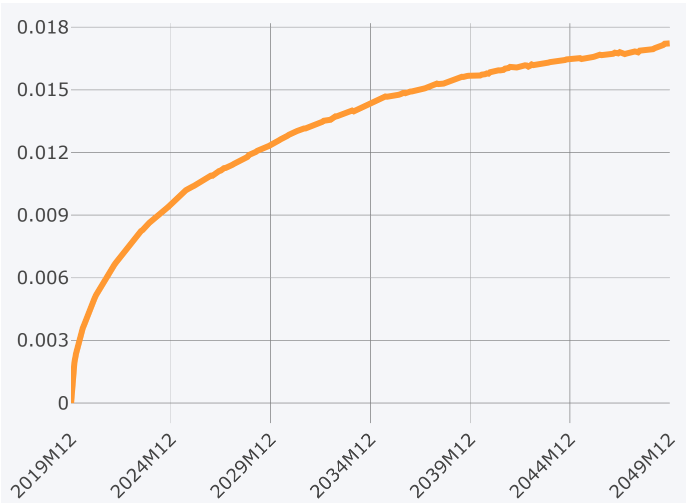
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

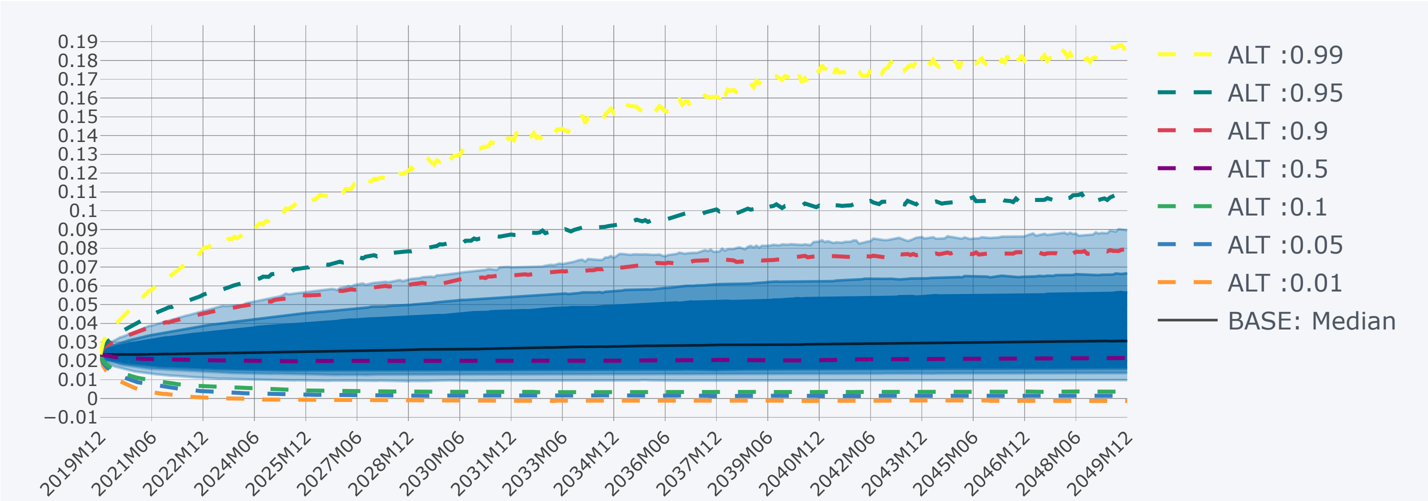
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0236	0.034	0.0227	0.0344
std	0.0046	0.0172	0.0097	0.0394
min	0.0098	0.0048	-0.0001	-0.0041
1%	0.0141	0.0094	0.0054	-0.0018
5%	0.0165	0.0131	0.0091	0.0011
10%	0.0179	0.0158	0.0113	0.0034
50%	0.0233	0.0306	0.0215	0.0217
90%	0.0297	0.0565	0.0356	0.0801
95%	0.0317	0.0668	0.0402	0.1092
99%	0.0354	0.0898	0.0499	0.1879
max	0.0452	0.1642	0.0784	0.4869

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 27 Year Yield - Coupon



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

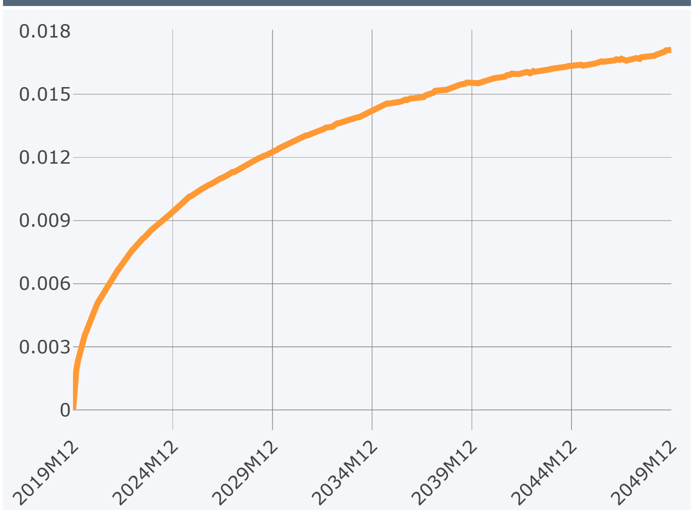
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

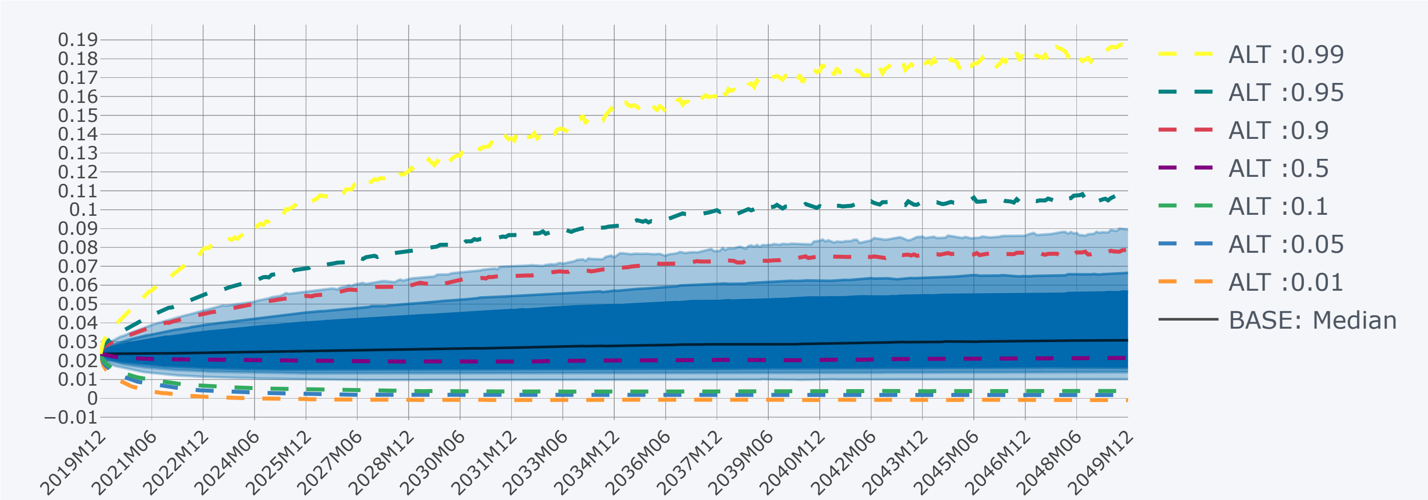
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0238	0.0342	0.0225	0.0342
std	0.0046	0.0171	0.0095	0.0391
min	0.0102	0.0053	0.0003	-0.0036
1%	0.0144	0.0098	0.0057	-0.0013
5%	0.0168	0.0135	0.0093	0.0015
10%	0.0181	0.0161	0.0114	0.0037
50%	0.0234	0.0307	0.0214	0.0216
90%	0.0298	0.0565	0.0352	0.0794
95%	0.0318	0.0667	0.0398	0.1084
99%	0.0355	0.0896	0.0493	0.1872
max	0.0452	0.164	0.0777	0.4868

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 28 Year Yield - Coupon



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

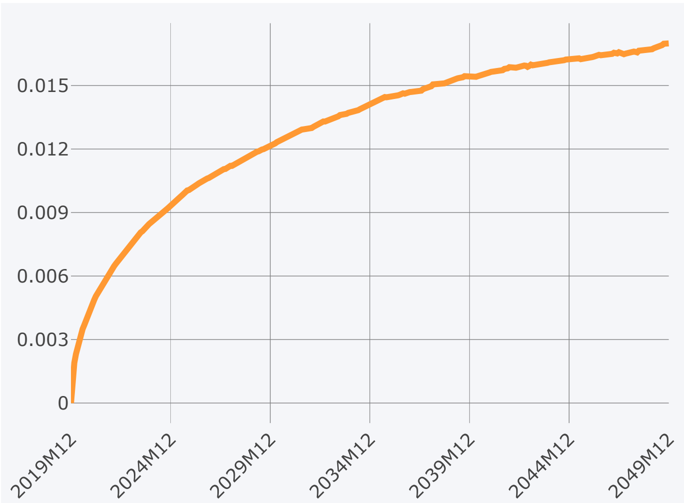
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0239	0.0343	0.0224	0.034
std	0.0045	0.017	0.0094	0.0388
min	0.0106	0.0058	0.0007	-0.0031
1%	0.0148	0.0102	0.0059	-0.0009
5%	0.0171	0.0138	0.0094	0.0018
10%	0.0184	0.0163	0.0115	0.0039
50%	0.0236	0.0308	0.0212	0.0214
90%	0.0299	0.0565	0.0349	0.0787
95%	0.0319	0.0666	0.0393	0.1076
99%	0.0355	0.0895	0.0488	0.1865
max	0.0452	0.1639	0.077	0.4867

Cross Sectional Volatility Over Time : BASE



US Treasury 29 Year Yield - Coupon

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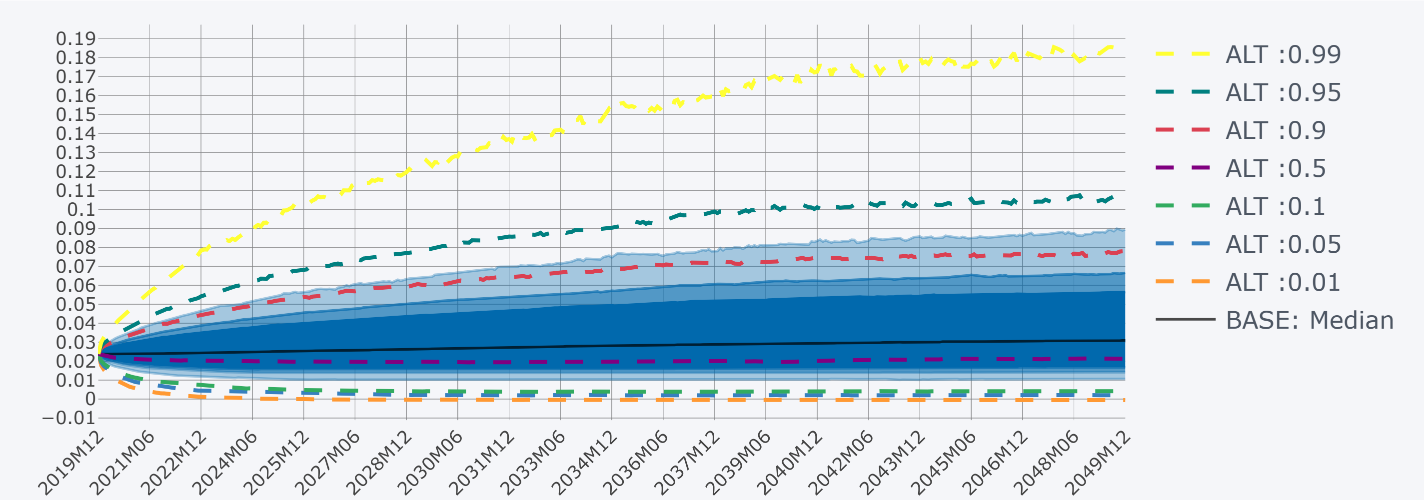
2019 Q4

Validation Report

Simulated Data in Percentiles : US Treasury 29 Year Yield - Coupon



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

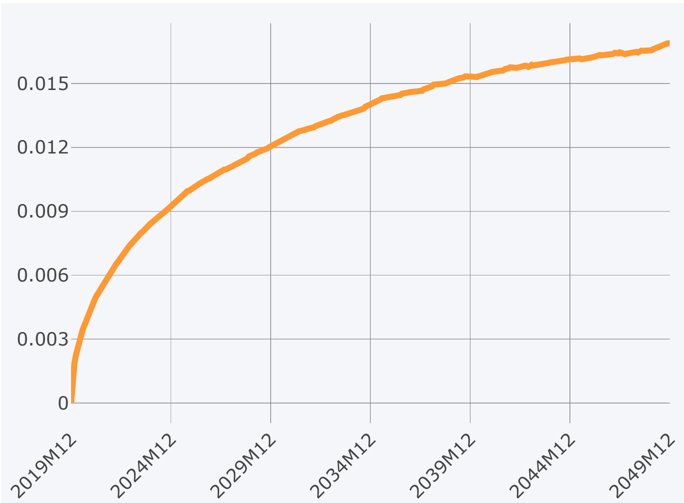
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

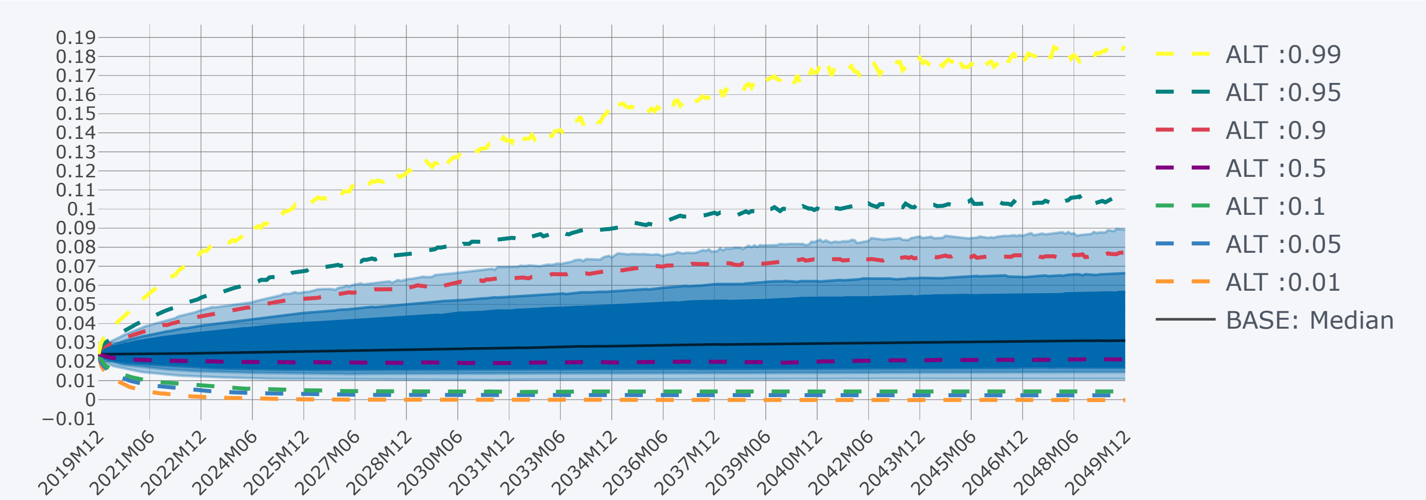
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0241	0.0344	0.0223	0.0338
std	0.0045	0.0169	0.0092	0.0386
min	0.011	0.0063	0.001	-0.0027
1%	0.015	0.0106	0.0061	-0.0006
5%	0.0173	0.0141	0.0095	0.002
10%	0.0186	0.0166	0.0116	0.0041
50%	0.0238	0.0309	0.0211	0.0213
90%	0.03	0.0564	0.0345	0.078
95%	0.0319	0.0665	0.0389	0.1068
99%	0.0356	0.0893	0.0483	0.1859
max	0.0452	0.1638	0.0763	0.4866

Cross Sectional Volatility Over Time : BASE



Simulated Data in Percentiles : US Treasury 30 Year Yield - Coupon



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

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

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

Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0242	0.0345	0.0221	0.0336
std	0.0044	0.0168	0.009	0.0383
min	0.0113	0.0067	0.0014	-0.0022
1%	0.0153	0.0109	0.0063	-0.0002
5%	0.0175	0.0144	0.0096	0.0023
10%	0.0188	0.0168	0.0117	0.0044
50%	0.0239	0.031	0.021	0.0211
90%	0.0301	0.0564	0.0342	0.0773
95%	0.032	0.0664	0.0385	0.1061
99%	0.0356	0.0892	0.0478	0.1853
max	0.0452	0.1636	0.0756	0.4865

Cross Sectional Volatility Over Time : BASE