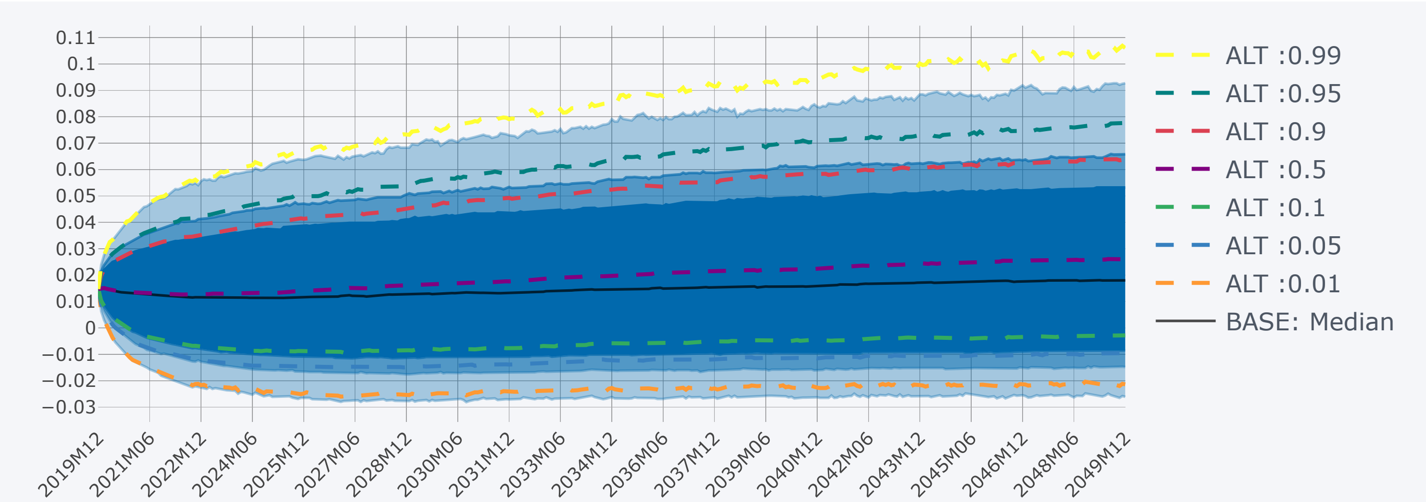
Simulated Data in Percentiles : US Treasury 1 Month Yield - Coupon



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

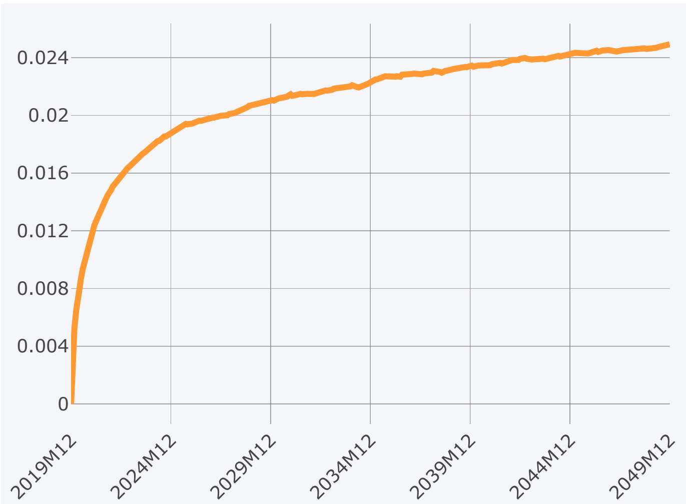
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

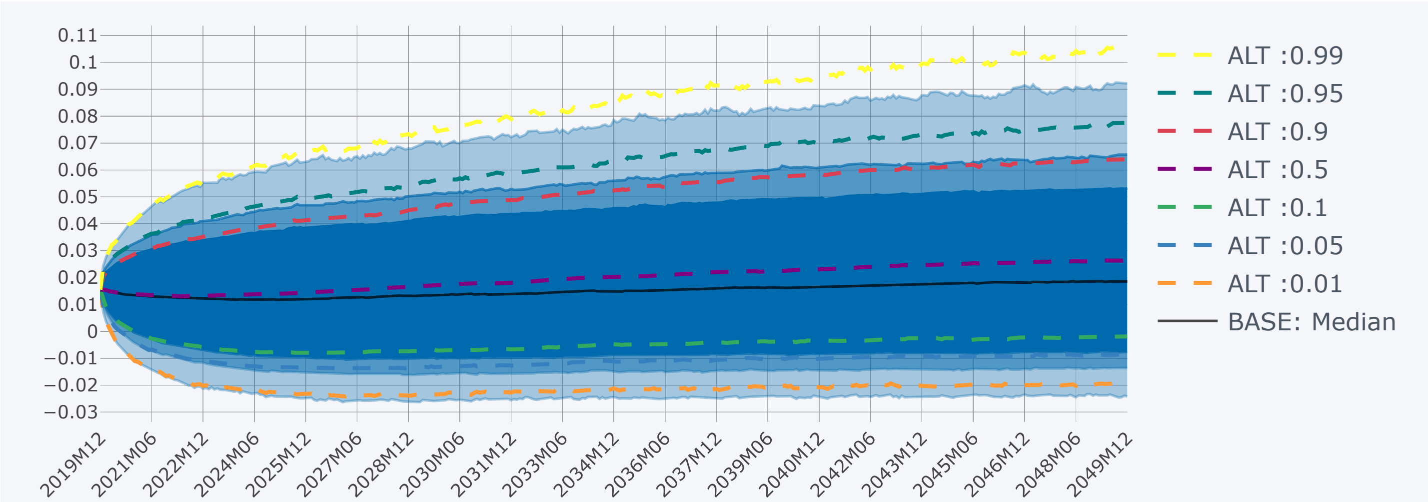
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0134	0.0207	0.0138	0.0289
std	0.0117	0.0249	0.0117	0.0269
min	-0.0266	-0.0459	-0.0264	-0.0434
1%	-0.0124	-0.0261	-0.0121	-0.0214
5%	-0.0052	-0.0148	-0.0049	-0.0095
10%	-0.0014	-0.0085	-0.0011	-0.0028
50%	0.0132	0.018	0.0136	0.026
90%	0.0285	0.0532	0.0289	0.0638
95%	0.0328	0.0658	0.0332	0.0776
99%	0.0416	0.0927	0.0419	0.1061
max	0.0671	0.1666	0.0675	0.1843

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.

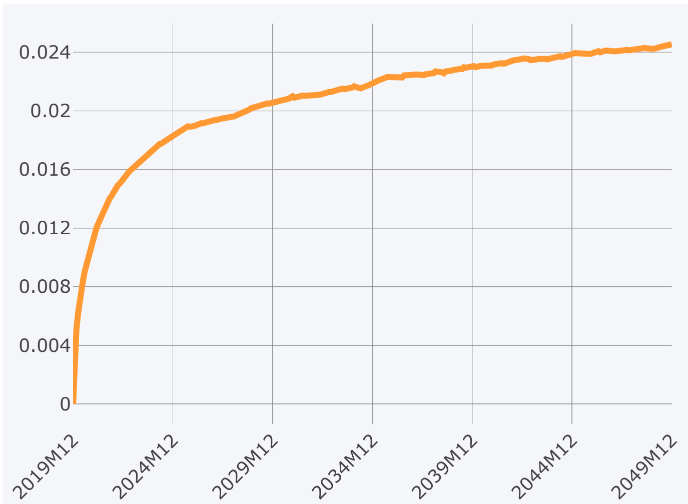
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

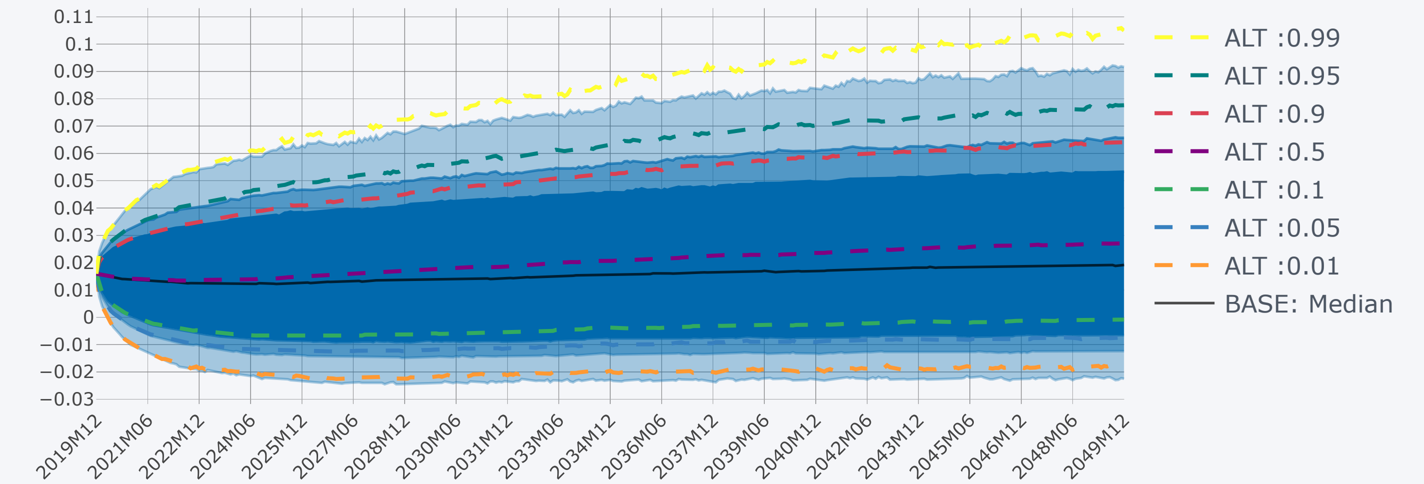
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0138	0.0213	0.0141	0.0294
std	0.0113	0.0245	0.0113	0.0266
min	-0.0247	-0.0451	-0.0245	-0.0427
1%	-0.0113	-0.0242	-0.011	-0.0199
5%	-0.0043	-0.0136	-0.004	-0.0086
10%	-0.0005	-0.0076	-0.0002	-0.0019
50%	0.0135	0.0186	0.0139	0.0266
90%	0.0285	0.0532	0.0288	0.064
95%	0.0327	0.0657	0.033	0.0775
99%	0.0411	0.0922	0.0414	0.1055
max	0.0669	0.1681	0.0672	0.1857

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.

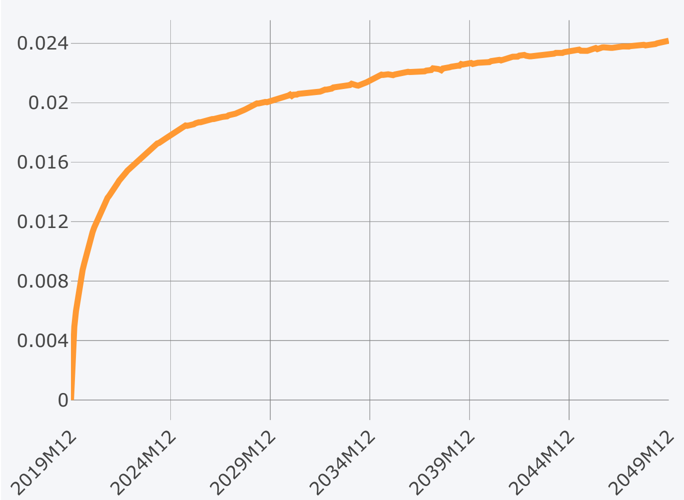
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

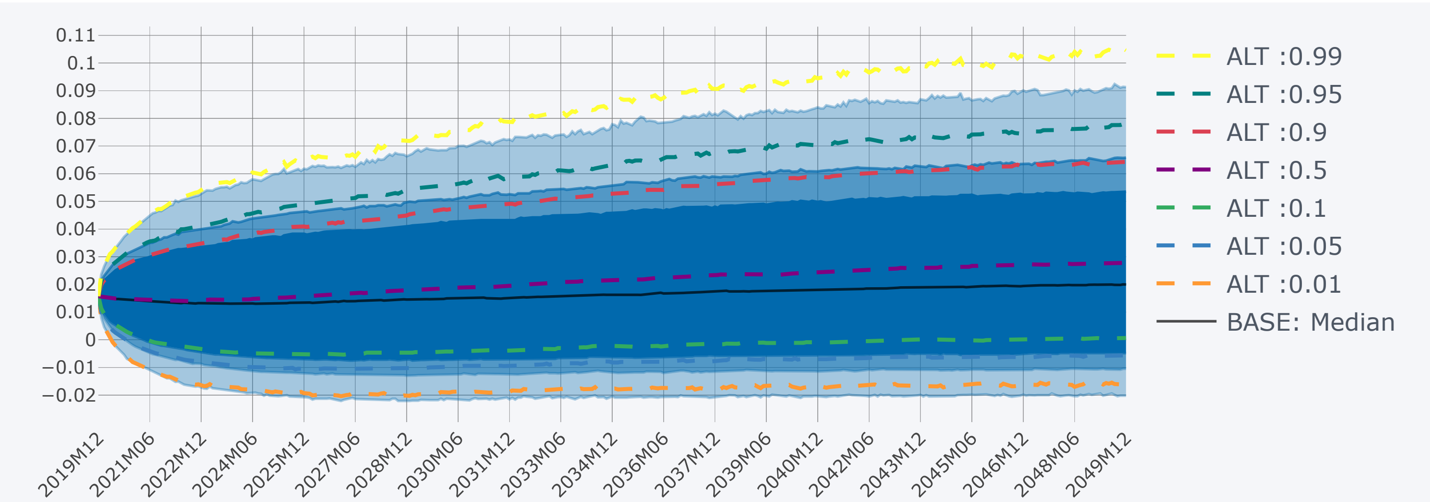
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0141	0.0218	0.0145	0.0299
std	0.0109	0.0242	0.0109	0.0262
min	-0.0229	-0.0438	-0.0227	-0.0414
1%	-0.0101	-0.0225	-0.0098	-0.0186
5%	-0.0033	-0.0124	-0.003	-0.0074
10%	0.0004	-0.0065	0.0007	-0.0008
50%	0.0139	0.0192	0.0142	0.0271
90%	0.0284	0.0533	0.0287	0.0641
95%	0.0325	0.0657	0.0328	0.0776
99%	0.0407	0.0916	0.041	0.1049
max	0.0661	0.1691	0.0665	0.1867

Cross Sectional Volatility Over Time : BASE



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.

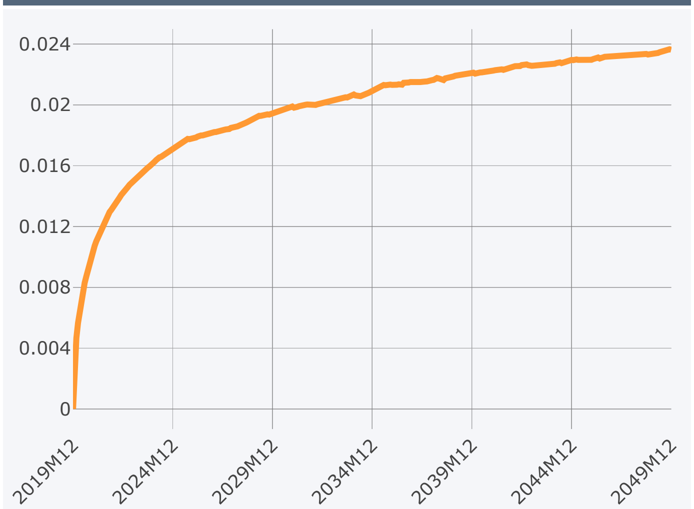
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

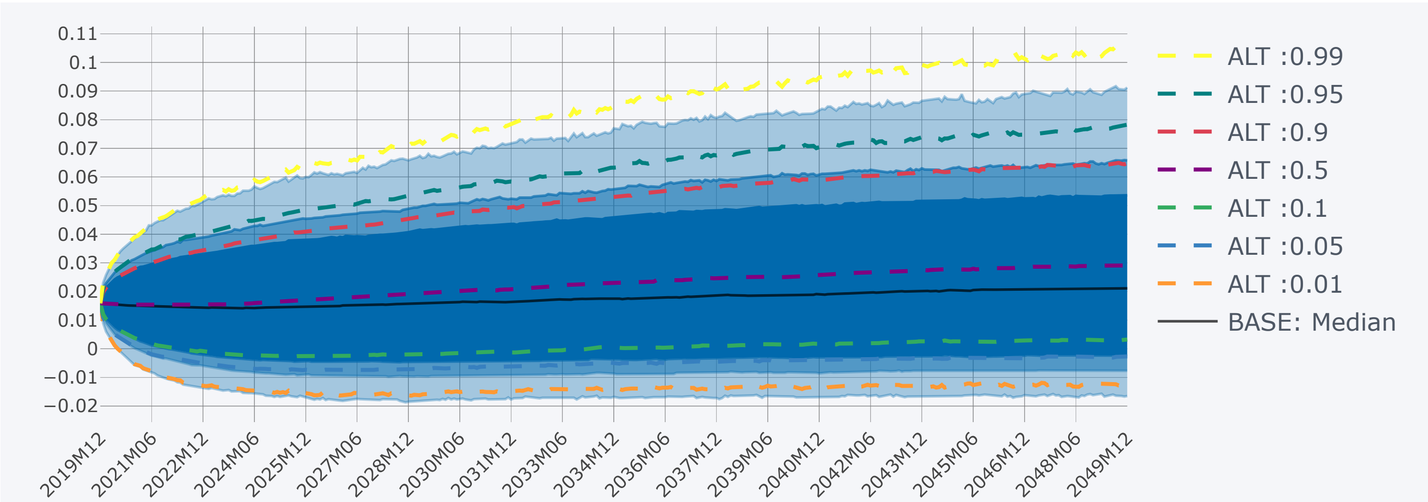
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0146	0.0227	0.015	0.0308
std	0.0104	0.0236	0.0104	0.0258
min	-0.0211	-0.041	-0.0209	-0.0386
1%	-0.0083	-0.0202	-0.0081	-0.0163
5%	-0.0019	-0.0105	-0.0016	-0.0056
10%	0.0016	-0.0048	0.0019	0.0006
50%	0.0144	0.02	0.0147	0.0278
90%	0.0281	0.0535	0.0284	0.0643
95%	0.0322	0.0658	0.0325	0.0778
99%	0.0401	0.0913	0.0404	0.1046
max	0.0644	0.1698	0.0647	0.1874

Cross Sectional Volatility Over Time : BASE



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.

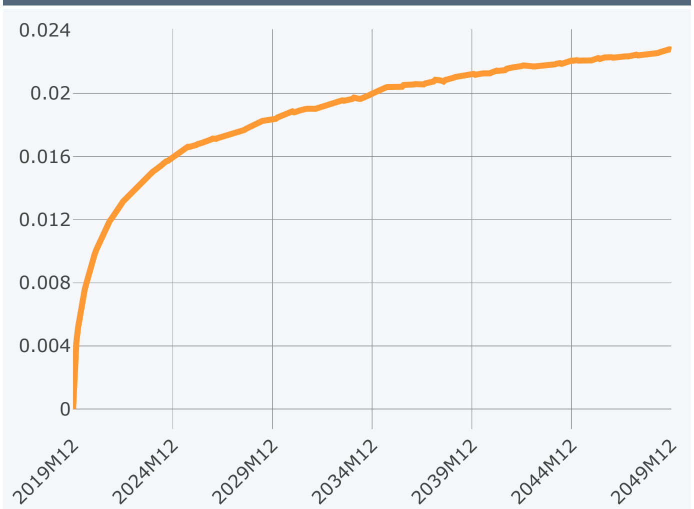
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

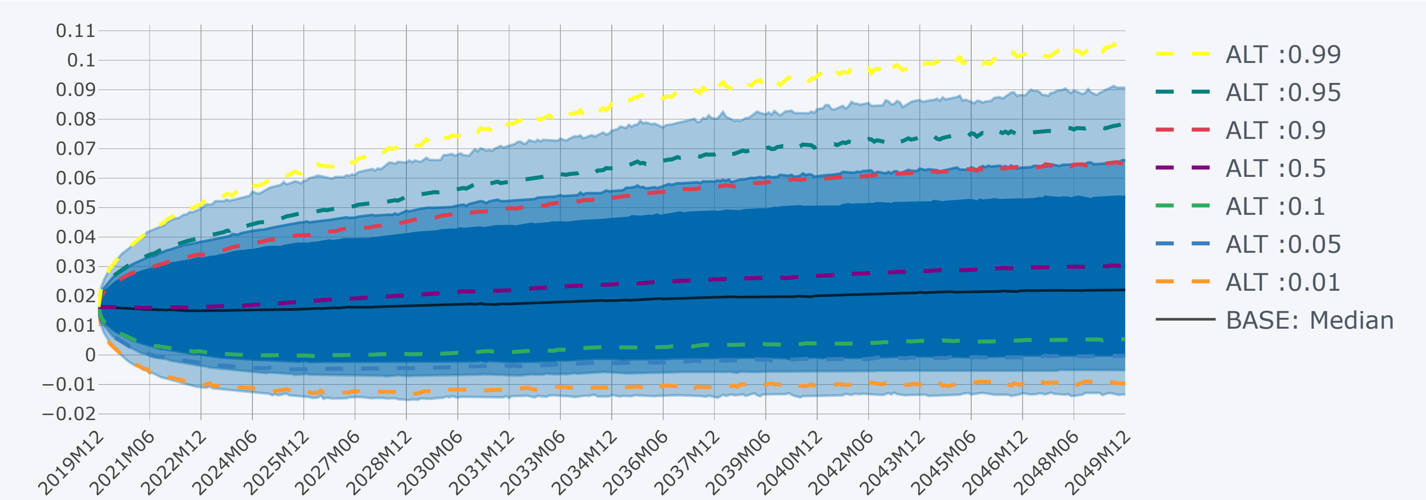
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0154	0.024	0.0157	0.0322
std	0.0095	0.0228	0.0095	0.025
min	-0.0177	-0.0356	-0.0175	-0.0332
1%	-0.0057	-0.0165	-0.0054	-0.0126
5%	0.0002	-0.0077	0.0006	-0.0027
10%	0.0034	-0.0024	0.0038	0.0032
50%	0.0152	0.0211	0.0155	0.0291
90%	0.0278	0.0536	0.0281	0.0648
95%	0.0313	0.0658	0.0317	0.0783
99%	0.0386	0.0912	0.039	0.1051
max	0.0609	0.1699	0.0613	0.1877

Cross Sectional Volatility Over Time : BASE



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.

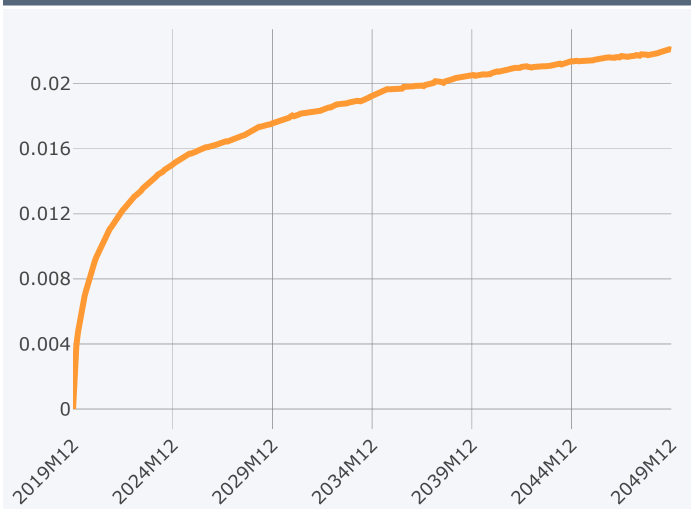
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0163	0.0334
std	0.0088	0.0221	0.0088	0.0244
min	-0.0147	-0.0309	-0.0145	-0.0285
1%	-0.0033	-0.0135	-0.0029	-0.0097
5%	0.0021	-0.0052	0.0025	-0.0003
10%	0.0049	-0.0002	0.0053	0.0053
50%	0.0158	0.0221	0.0162	0.0302
90%	0.0273	0.0538	0.0278	0.0651
95%	0.0308	0.0661	0.0312	0.0786
99%	0.0373	0.0907	0.0377	0.1049
max	0.058	0.1697	0.0584	0.1876

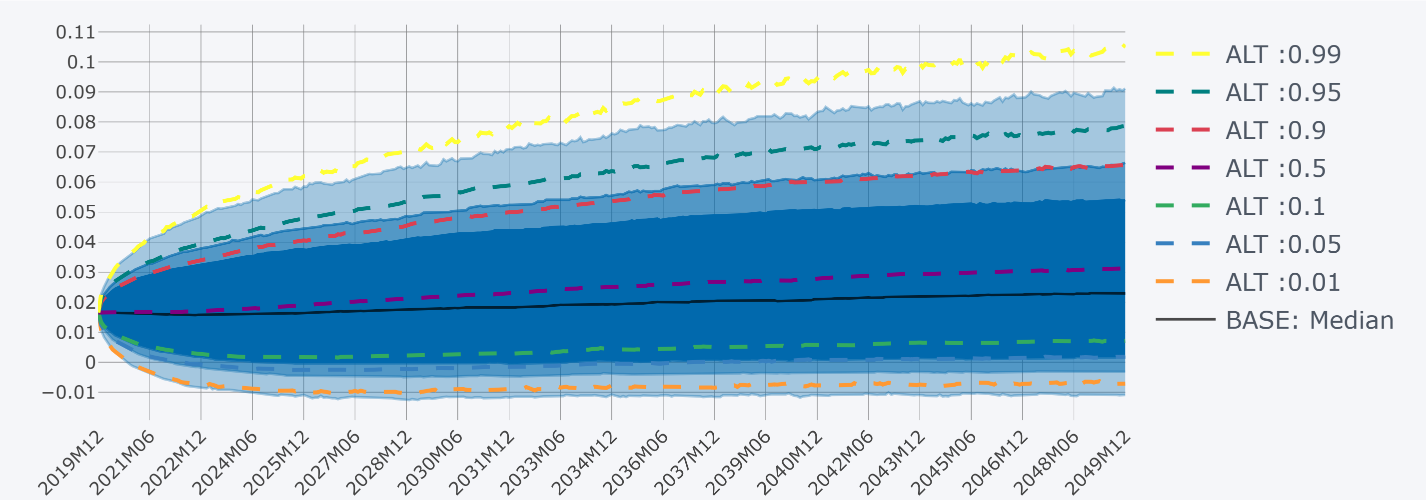
Cross Sectional Volatility Over Time : BASE



US Treasury 4 Year Yield - Coupon
Conning | Risk Solutions

2019 Q4
Validation Report

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.

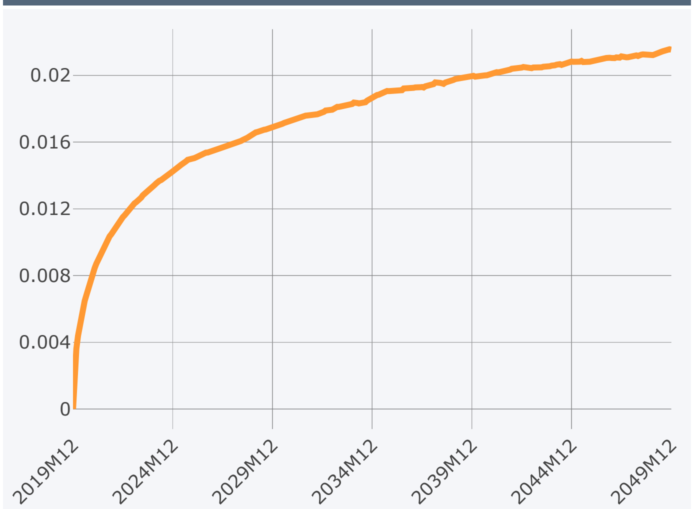
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0169	0.0344
std	0.0082	0.0215	0.0082	0.0239
min	-0.0121	-0.0269	-0.0118	-0.0243
1%	-0.0013	-0.0109	-0.001	-0.0071
5%	0.0037	-0.0032	0.0041	0.0018
10%	0.0063	0.0016	0.0066	0.0071
50%	0.0163	0.0229	0.0167	0.0312
90%	0.0271	0.054	0.0275	0.0657
95%	0.0303	0.0664	0.0308	0.0788
99%	0.0364	0.0911	0.0368	0.1058
max	0.0556	0.1695	0.056	0.1875

Cross Sectional Volatility Over Time : BASE



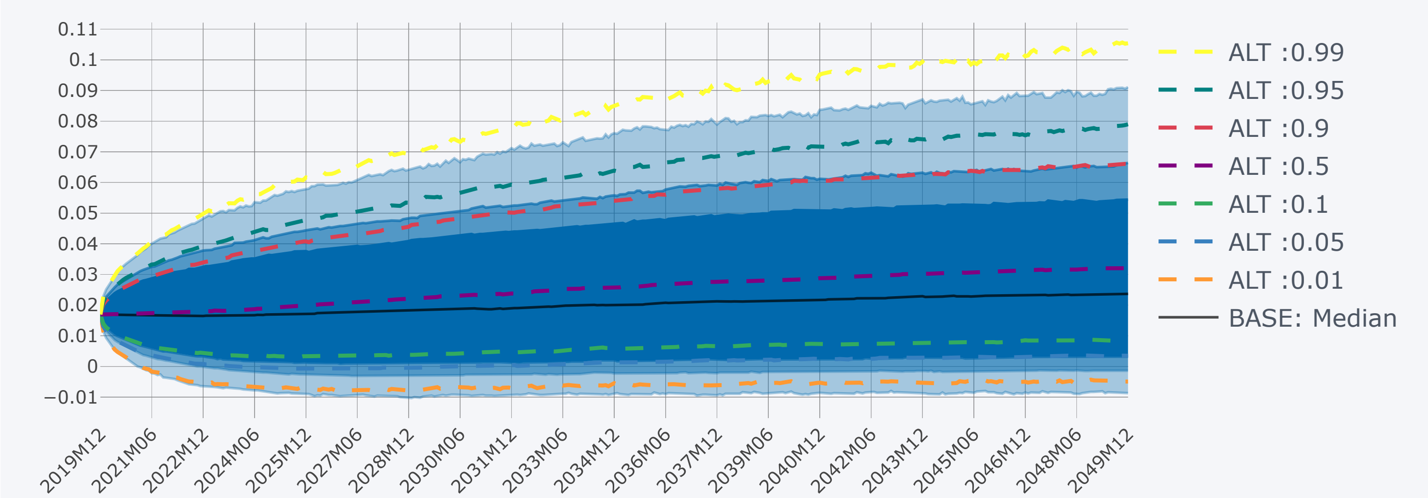
US Treasury 5 Year Yield - Coupon

Conning | Risk Solutions

2019 Q4

Validation Report

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.

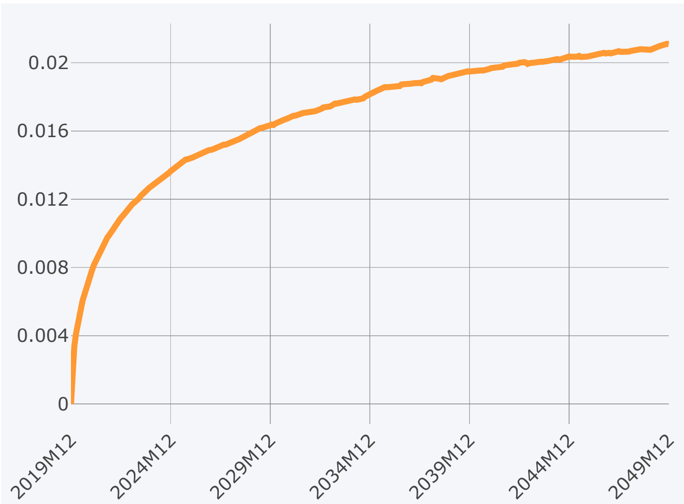
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

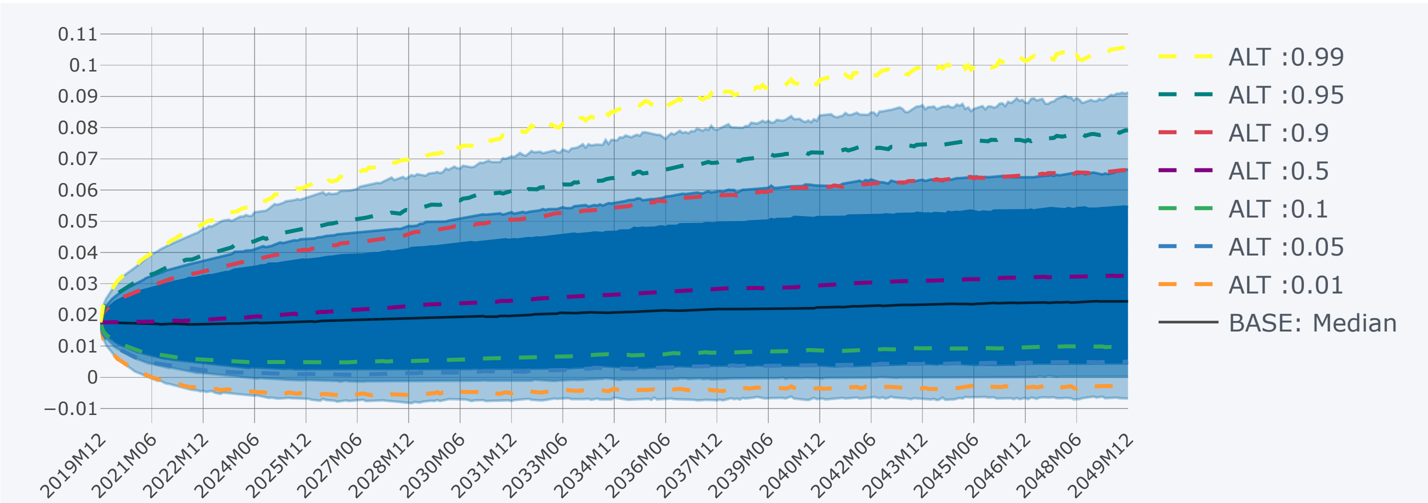
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0171	0.0268	0.0175	0.0354
std	0.0077	0.0211	0.0077	0.0235
min	-0.0098	-0.0233	-0.0095	-0.0207
1%	0.0005	-0.0087	0.0008	-0.0049
5%	0.005	-0.0014	0.0054	0.0035
10%	0.0074	0.0032	0.0078	0.0087
50%	0.0168	0.0237	0.0172	0.032
90%	0.0269	0.0544	0.0274	0.066
95%	0.03	0.0664	0.0304	0.079
99%	0.0357	0.0911	0.0361	0.1054
max	0.0535	0.1692	0.054	0.1873

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.

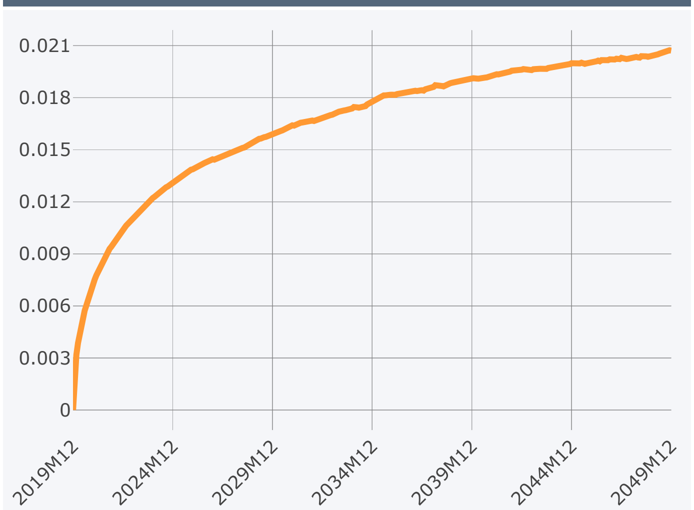
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

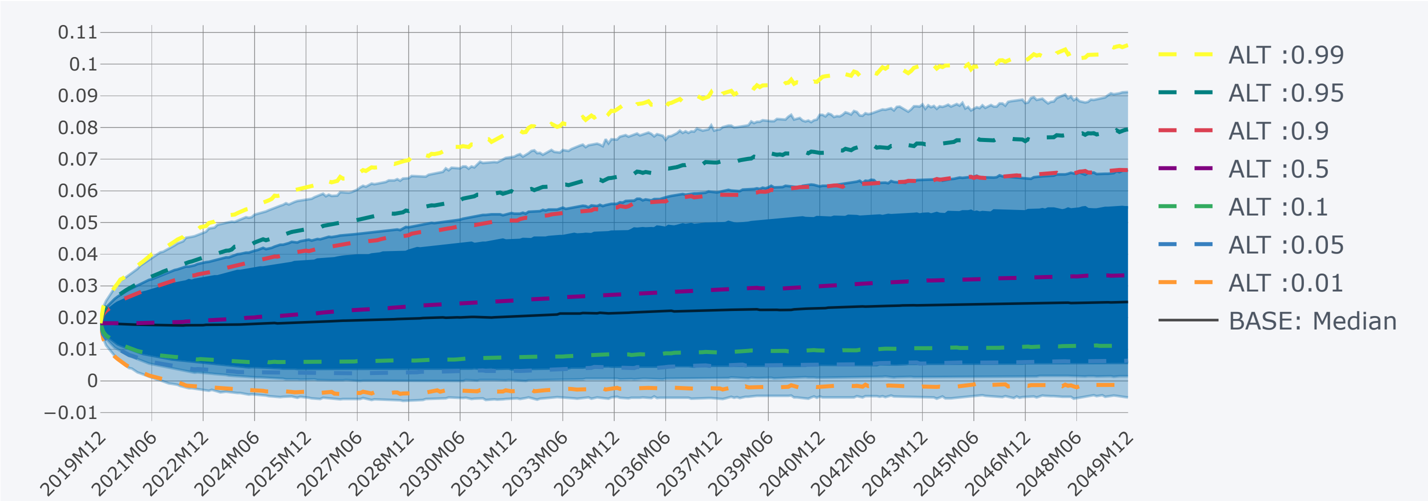
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0176	0.0276	0.018	0.0361
std	0.0073	0.0207	0.0073	0.0231
min	-0.0077	-0.0202	-0.0074	-0.0175
1%	0.0019	-0.0068	0.0023	-0.0031
5%	0.0061	0.0002	0.0065	0.0051
10%	0.0084	0.0045	0.0088	0.01
50%	0.0173	0.0243	0.0178	0.0327
90%	0.0269	0.0545	0.0274	0.0661
95%	0.0298	0.0666	0.0303	0.0791
99%	0.0351	0.0913	0.0357	0.1056
max	0.0518	0.1689	0.0523	0.187

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.

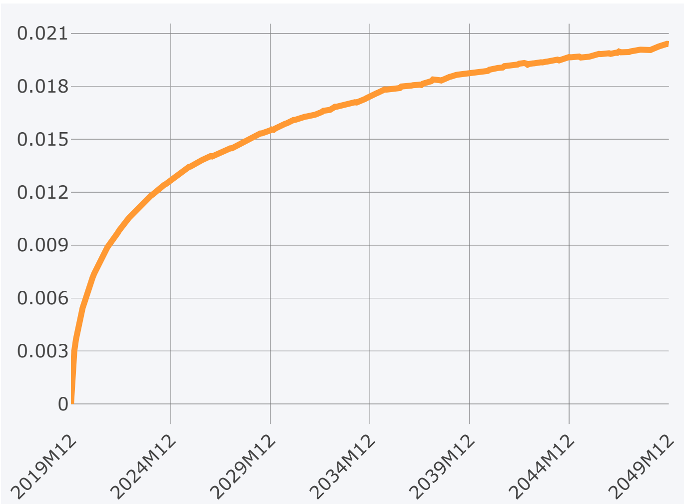
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

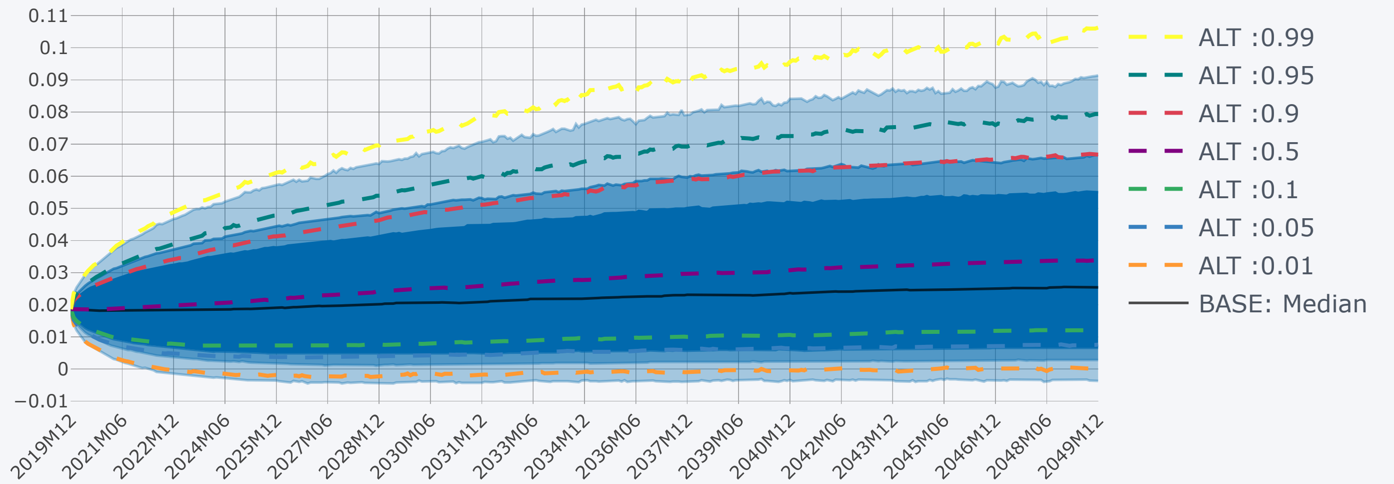
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.018	0.0282	0.0185	0.0369
std	0.0069	0.0204	0.0069	0.0228
min	-0.0059	-0.0174	-0.0056	-0.0148
1%	0.0032	-0.0052	0.0036	-0.0015
5%	0.0072	0.0015	0.0076	0.0064
10%	0.0093	0.0057	0.0097	0.0111
50%	0.0178	0.0249	0.0182	0.0334
90%	0.027	0.0548	0.0275	0.0665
95%	0.0297	0.0666	0.0302	0.0794
99%	0.0348	0.0912	0.0354	0.106
max	0.0504	0.1686	0.0509	0.1868

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.

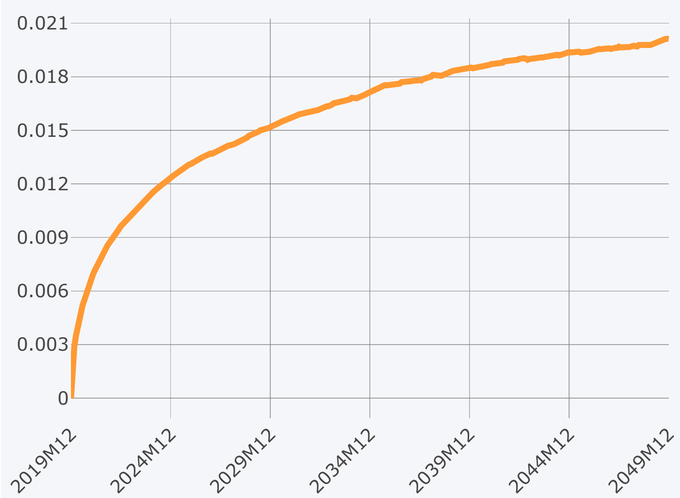
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

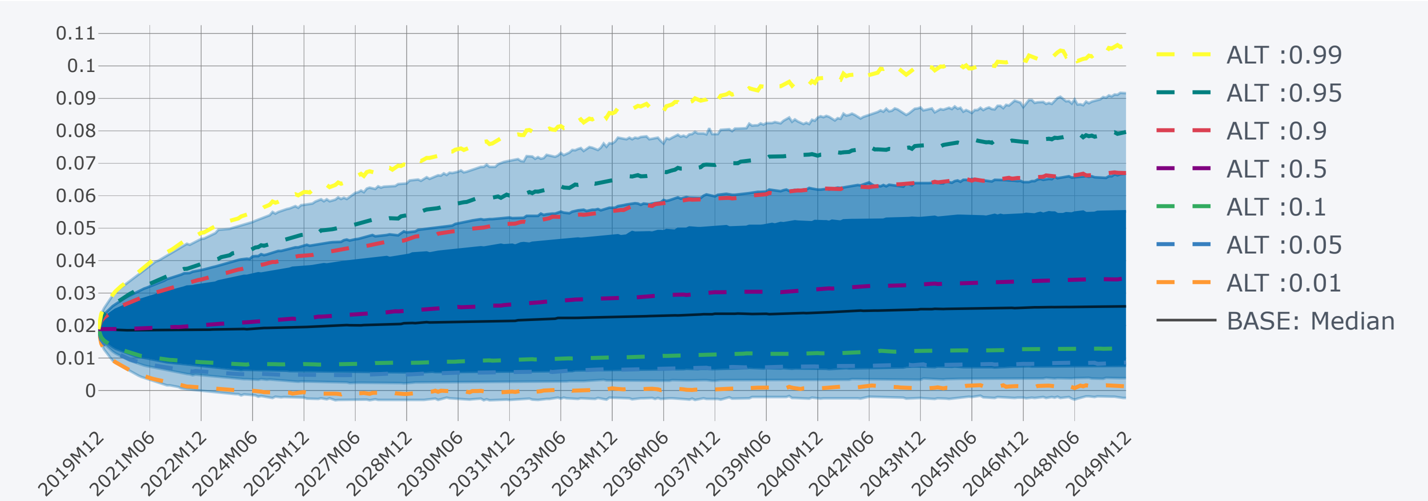
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0184	0.0289	0.0189	0.0375
std	0.0066	0.0201	0.0066	0.0226
min	-0.0043	-0.015	-0.004	-0.0123
1%	0.0044	-0.0037	0.0047	0
5%	0.0081	0.0028	0.0085	0.0076
10%	0.0101	0.0066	0.0106	0.0121
50%	0.0182	0.0254	0.0187	0.0339
90%	0.027	0.055	0.0276	0.0667
95%	0.0297	0.0667	0.0302	0.0794
99%	0.0347	0.0914	0.0353	0.1063
max	0.0492	0.1684	0.0497	0.1866

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.

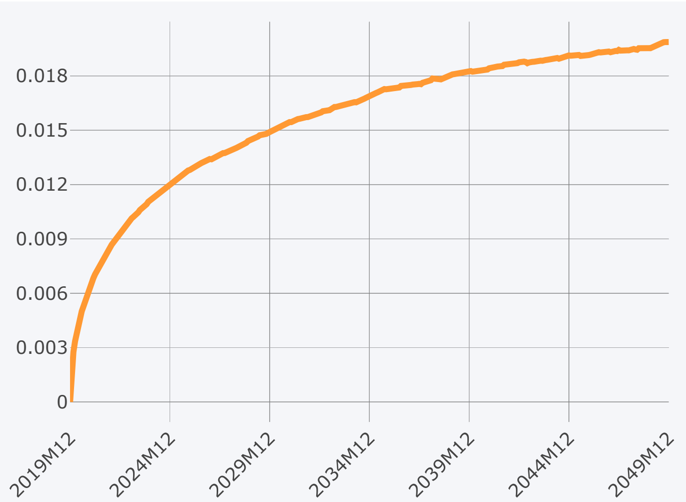
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

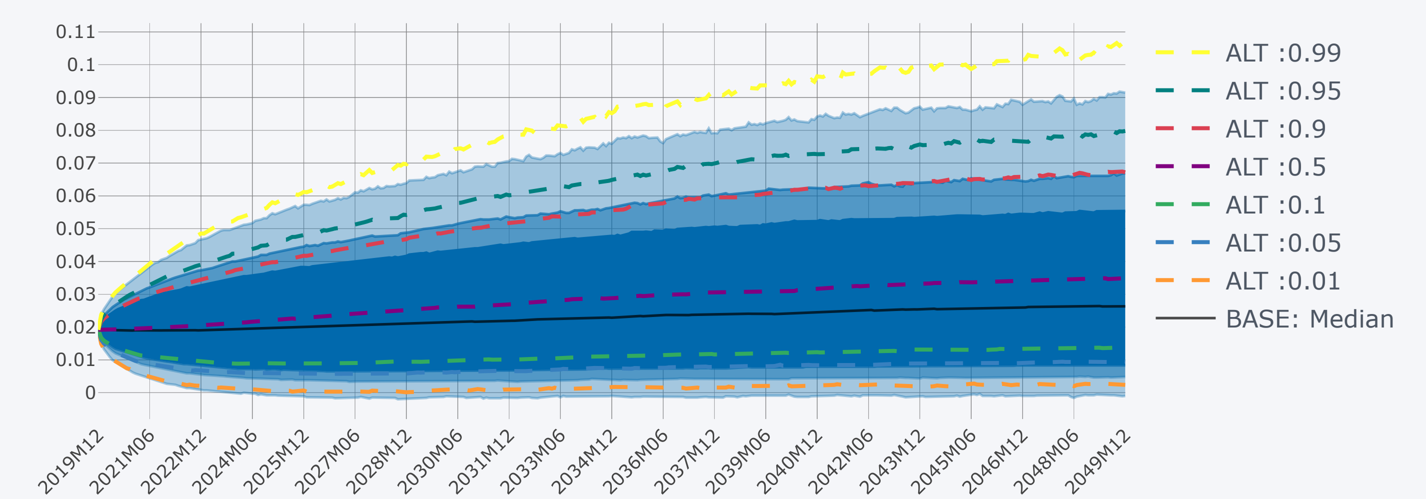
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0189	0.0294	0.0193	0.038
std	0.0064	0.0199	0.0064	0.0223
min	-0.0029	-0.0128	-0.0025	-0.0102
1%	0.0053	-0.0023	0.0058	0.0013
5%	0.0089	0.0038	0.0093	0.0086
10%	0.0109	0.0076	0.0113	0.013
50%	0.0186	0.0259	0.019	0.0344
90%	0.0272	0.0552	0.0277	0.067
95%	0.0297	0.0668	0.0302	0.0796
99%	0.0347	0.0916	0.0353	0.1064
max	0.0481	0.1681	0.0487	0.1863

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.

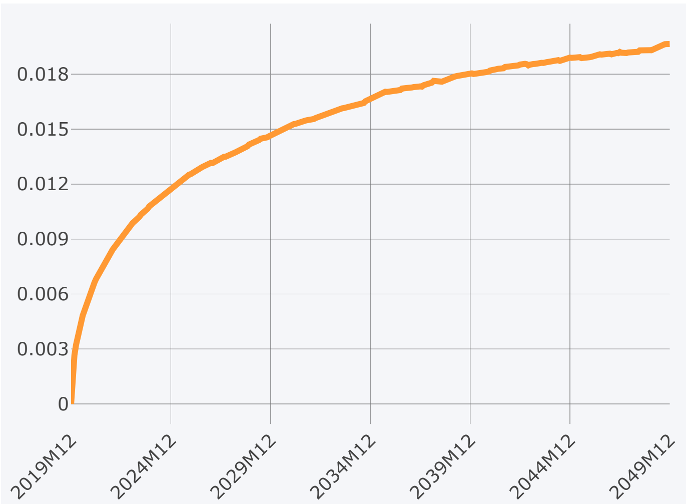
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

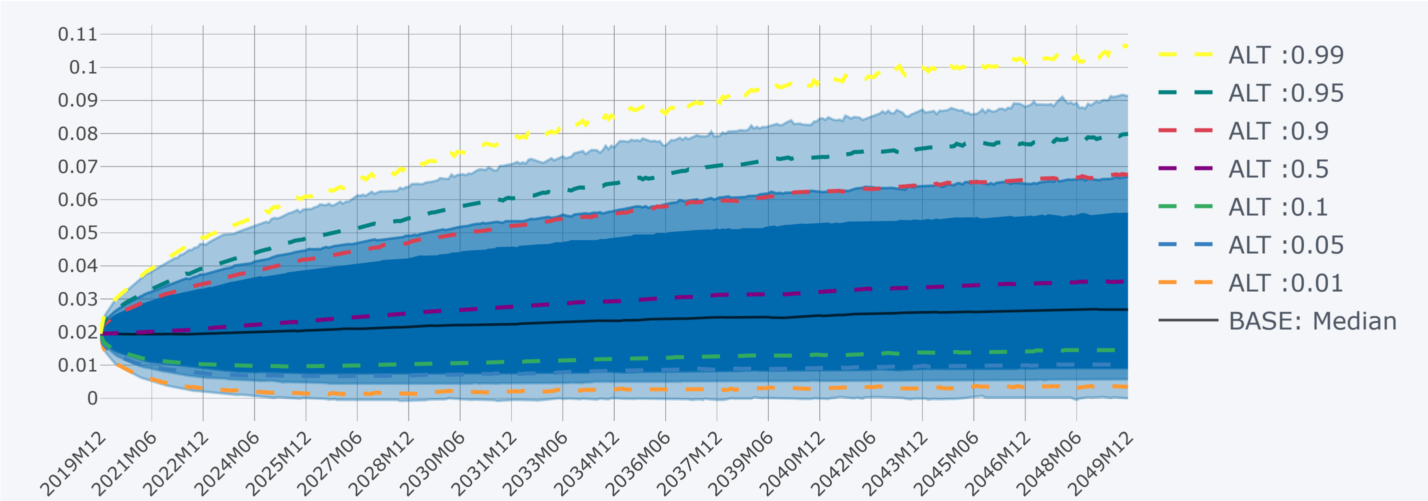
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0192	0.0299	0.0197	0.0385
std	0.0062	0.0196	0.0062	0.0221
min	-0.0016	-0.0109	-0.0012	-0.0082
1%	0.0062	-0.001	0.0067	0.0024
5%	0.0097	0.0048	0.0101	0.0095
10%	0.0115	0.0083	0.012	0.0138
50%	0.0189	0.0263	0.0194	0.0349
90%	0.0273	0.0554	0.0278	0.0672
95%	0.0297	0.0669	0.0303	0.0798
99%	0.0346	0.0915	0.0351	0.1062
max	0.0473	0.1678	0.0478	0.186

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.

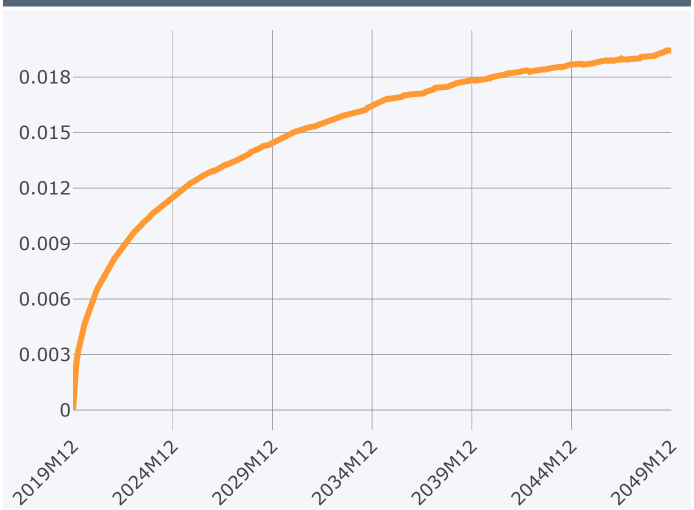
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0201	0.039
std	0.006	0.0194	0.006	0.0219
min	-0.0004	-0.0092	0	-0.0065
1%	0.0071	0	0.0075	0.0035
5%	0.0103	0.0057	0.0108	0.0103
10%	0.0122	0.0091	0.0126	0.0146
50%	0.0193	0.0268	0.0198	0.0353
90%	0.0274	0.0556	0.028	0.0676
95%	0.0298	0.067	0.0304	0.0799
99%	0.0346	0.0913	0.0351	0.1062
max	0.0465	0.1675	0.0471	0.1858

Cross Sectional Volatility Over Time : BASE



US Treasury 12 Year Yield - Coupon
Conning | Risk Solutions

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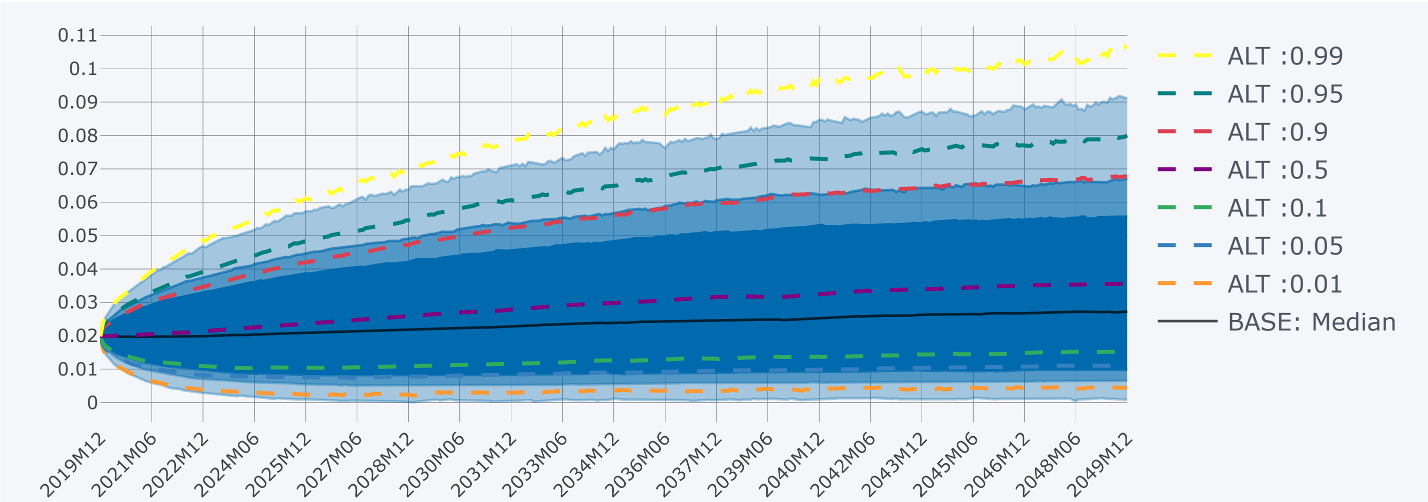
Simulated Data in Percentiles : US Treasury 12 Year Yield - Coupon



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

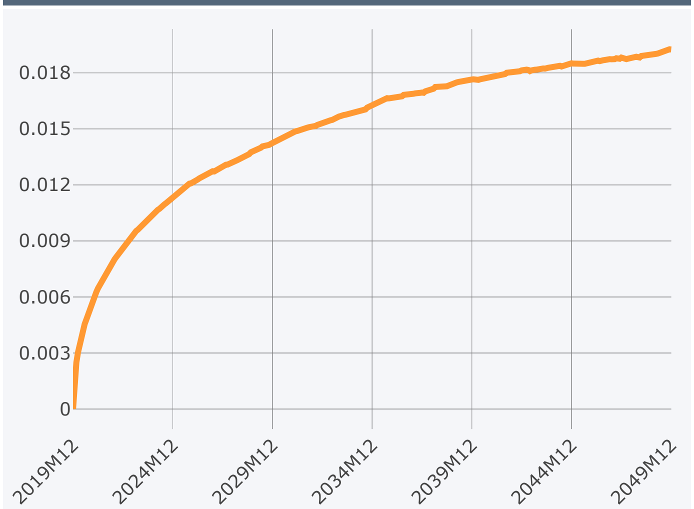
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0205	0.0394
std	0.0058	0.0193	0.0059	0.0217
min	0.0007	-0.0076	0.0011	-0.005
1%	0.0078	0.0009	0.0082	0.0044
5%	0.011	0.0065	0.0114	0.011
10%	0.0127	0.0098	0.0132	0.0153
50%	0.0197	0.0272	0.0202	0.0358
90%	0.0276	0.0557	0.0281	0.0678
95%	0.03	0.0671	0.0305	0.0799
99%	0.0346	0.0911	0.0352	0.1062
max	0.0459	0.1673	0.0465	0.1855

Cross Sectional Volatility Over Time : BASE



US Treasury 13 Year Yield - Coupon
Conning | Risk Solutions

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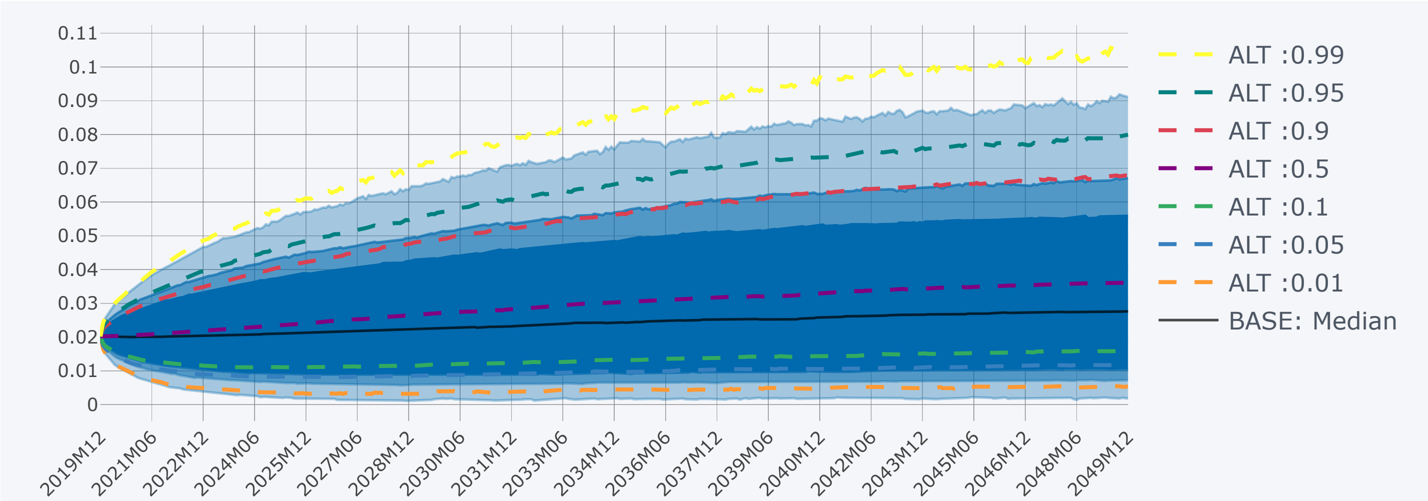
Simulated Data in Percentiles : US Treasury 13 Year Yield - Coupon



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

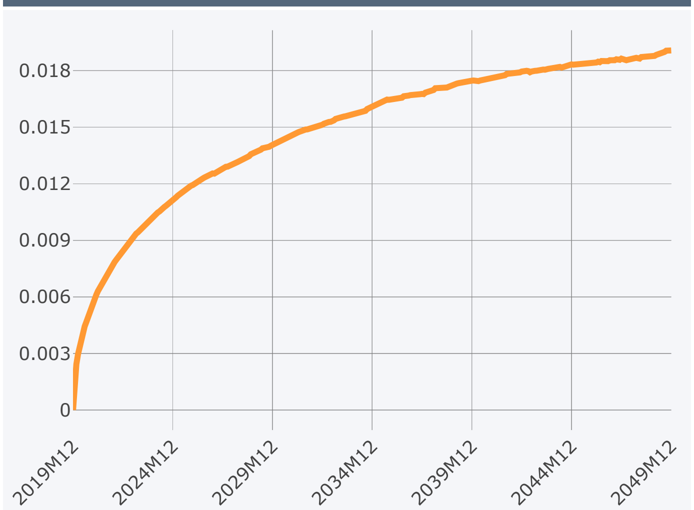
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0208	0.0397
std	0.0057	0.0191	0.0057	0.0215
min	0.0017	-0.0062	0.0021	-0.0036
1%	0.0085	0.0018	0.0089	0.0053
5%	0.0115	0.0072	0.012	0.0117
10%	0.0132	0.0105	0.0137	0.0158
50%	0.02	0.0276	0.0205	0.0361
90%	0.0277	0.0559	0.0283	0.0678
95%	0.0301	0.0671	0.0307	0.08
99%	0.0347	0.0911	0.0353	0.106
max	0.0454	0.167	0.0459	0.1852

Cross Sectional Volatility Over Time : BASE



US Treasury 14 Year Yield - Coupon
Conning | Risk Solutions

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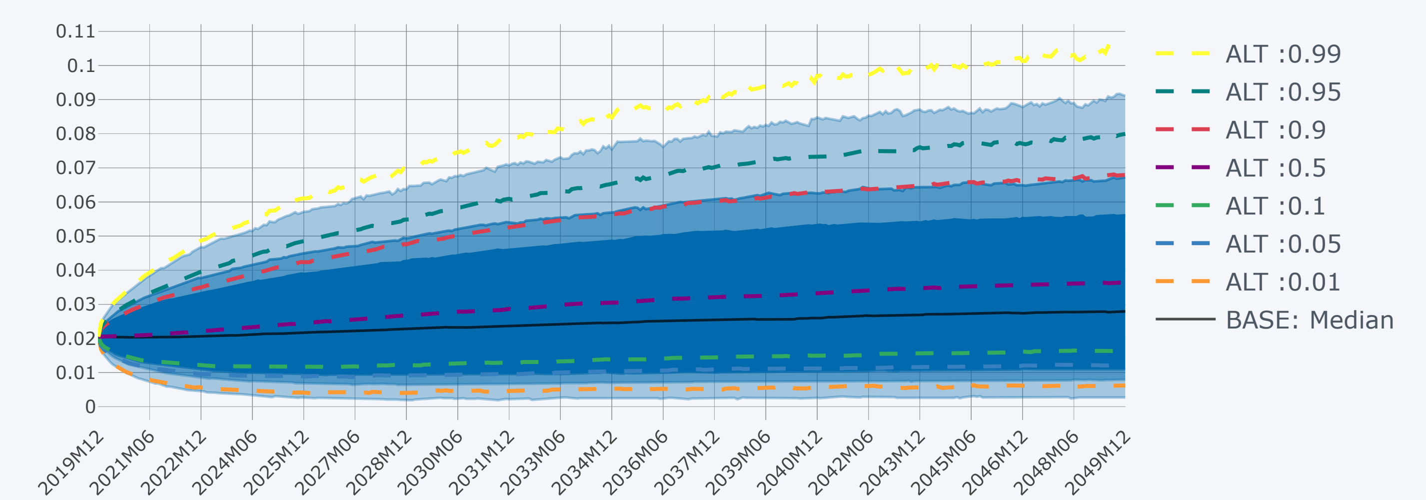
Simulated Data in Percentiles : US Treasury 14 Year Yield - Coupon



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

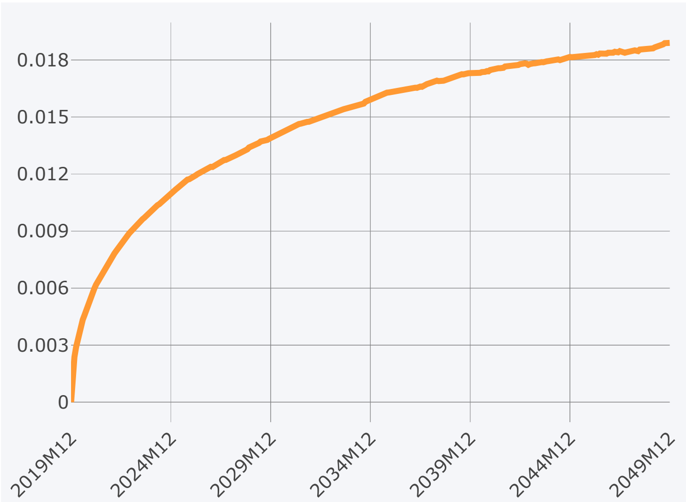
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

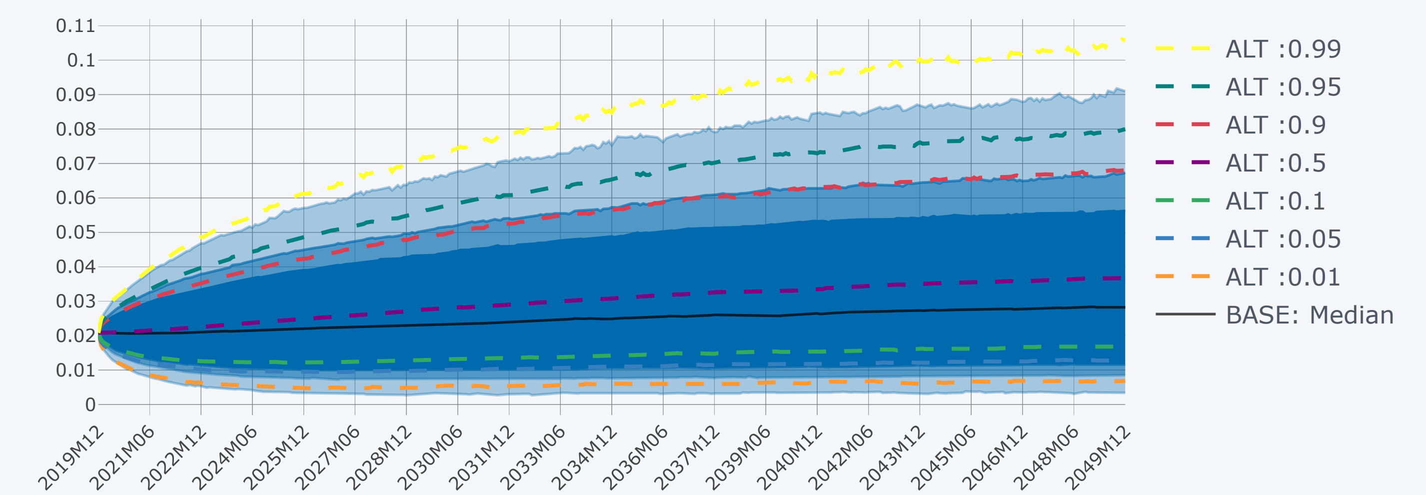
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0207	0.0315	0.0212	0.04
std	0.0056	0.0189	0.0056	0.0214
min	0.0026	-0.0049	0.003	-0.0023
1%	0.009	0.0027	0.0095	0.0062
5%	0.0121	0.0079	0.0125	0.0123
10%	0.0137	0.011	0.0142	0.0163
50%	0.0203	0.0279	0.0208	0.0364
90%	0.0279	0.0561	0.0285	0.0679
95%	0.0302	0.0672	0.0308	0.08
99%	0.0347	0.0911	0.0353	0.1058
max	0.0449	0.1667	0.0455	0.185

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.

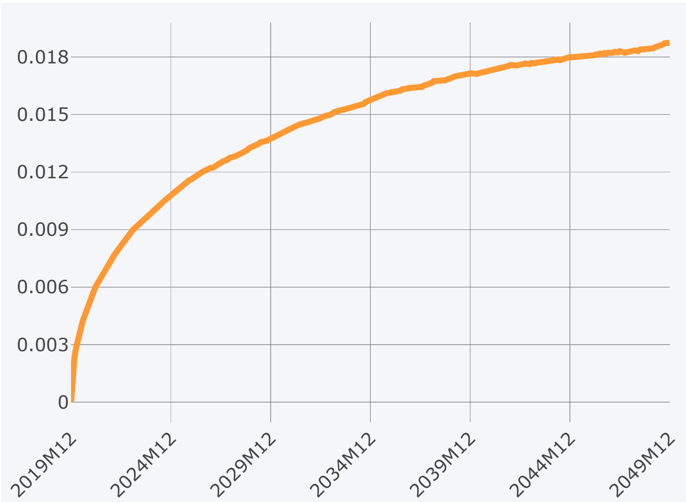
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

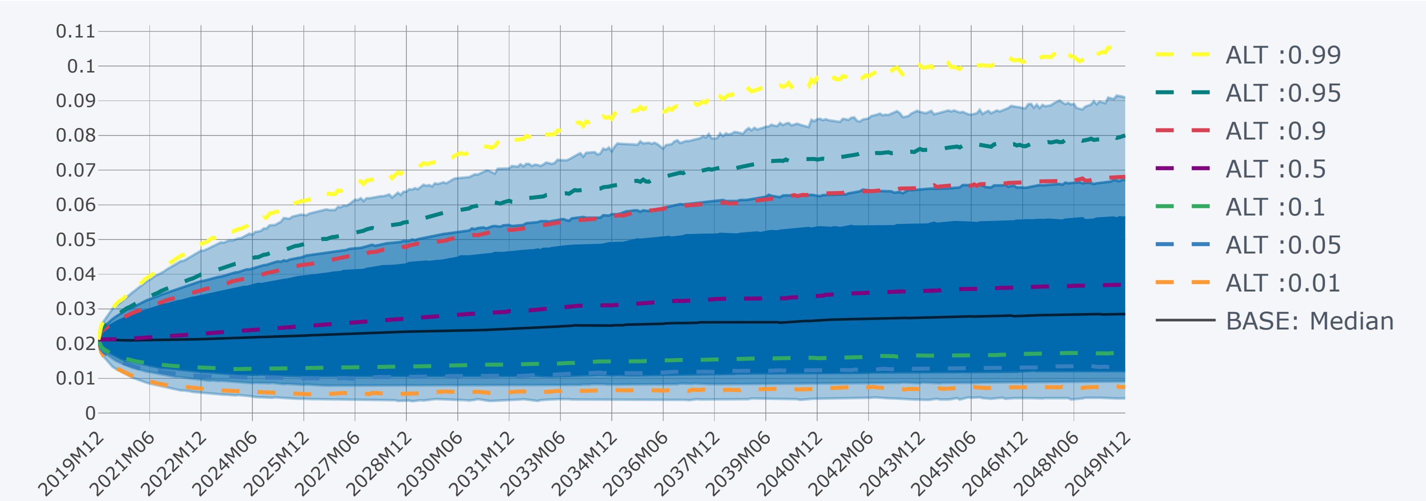
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.021	0.0318	0.0215	0.0403
std	0.0054	0.0187	0.0055	0.0212
min	0.0034	-0.0038	0.0038	-0.0011
1%	0.0096	0.0034	0.01	0.0069
5%	0.0126	0.0085	0.013	0.0128
10%	0.0142	0.0116	0.0147	0.0168
50%	0.0206	0.0282	0.0211	0.0367
90%	0.0281	0.0562	0.0287	0.068
95%	0.0304	0.0673	0.0309	0.08
99%	0.0347	0.091	0.0353	0.1057
max	0.0445	0.1665	0.0452	0.1847

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.

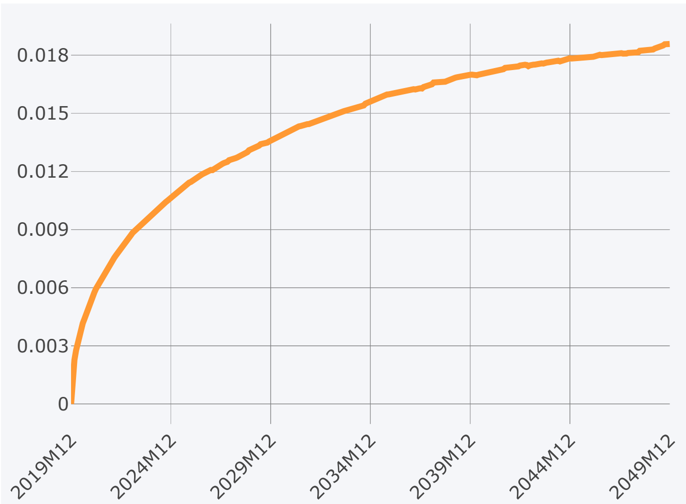
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

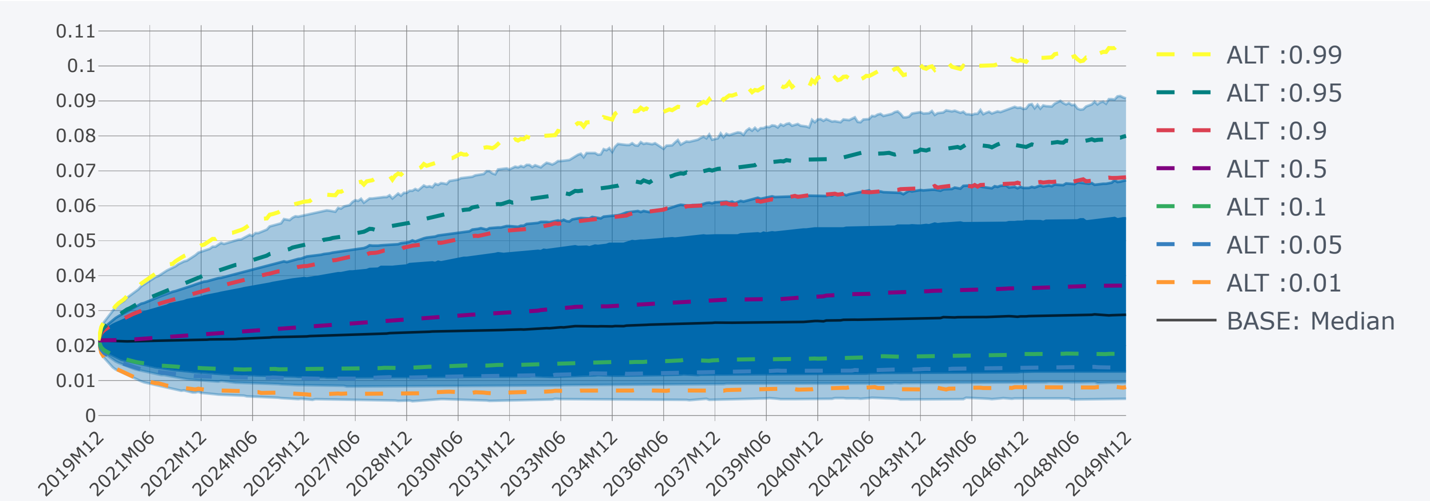
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0213	0.0321	0.0218	0.0406
std	0.0053	0.0186	0.0054	0.021
min	0.0042	-0.0027	0.0046	-0.0001
1%	0.0102	0.0042	0.0106	0.0075
5%	0.013	0.0091	0.0135	0.0133
10%	0.0146	0.0121	0.0151	0.0173
50%	0.0209	0.0285	0.0214	0.037
90%	0.0283	0.0563	0.0289	0.0681
95%	0.0305	0.0672	0.0311	0.08
99%	0.0348	0.0909	0.0354	0.1056
max	0.0446	0.1662	0.0453	0.1845

Cross Sectional Volatility Over Time : BASE



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.

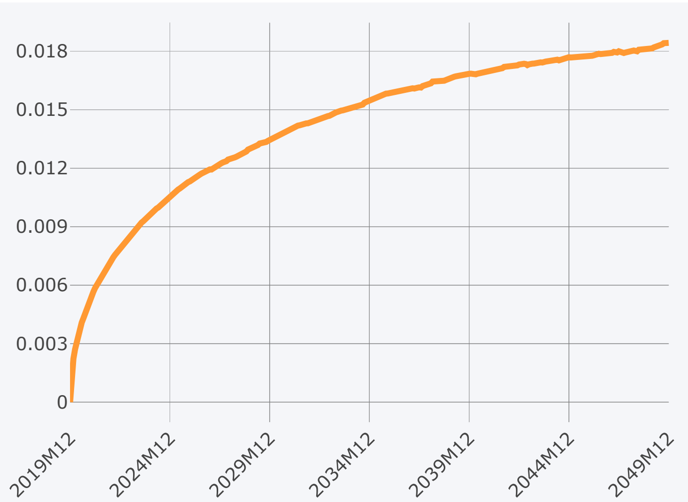
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

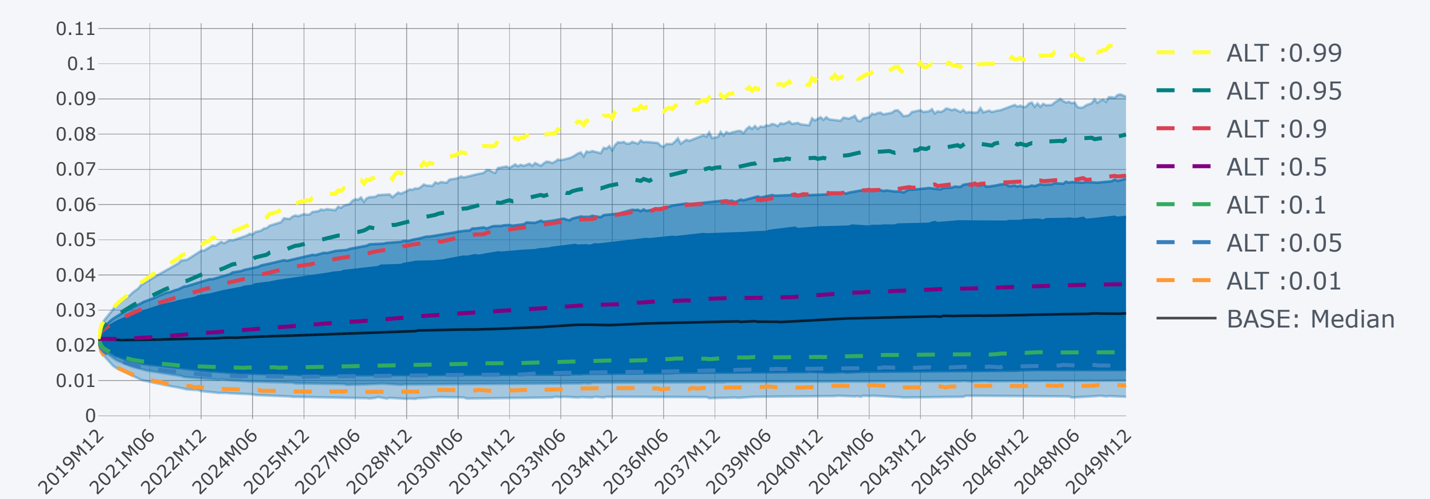
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0216	0.0324	0.0221	0.0408
std	0.0053	0.0184	0.0053	0.0209
min	0.005	-0.0017	0.0053	0.0009
1%	0.0107	0.0048	0.0111	0.0082
5%	0.0135	0.0095	0.0139	0.0138
10%	0.015	0.0126	0.0155	0.0177
50%	0.0212	0.0288	0.0217	0.0372
90%	0.0285	0.0564	0.029	0.0682
95%	0.0307	0.0673	0.0312	0.08
99%	0.0349	0.0907	0.0355	0.1056
max	0.0448	0.166	0.0454	0.1843

Cross Sectional Volatility Over Time : BASE



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.

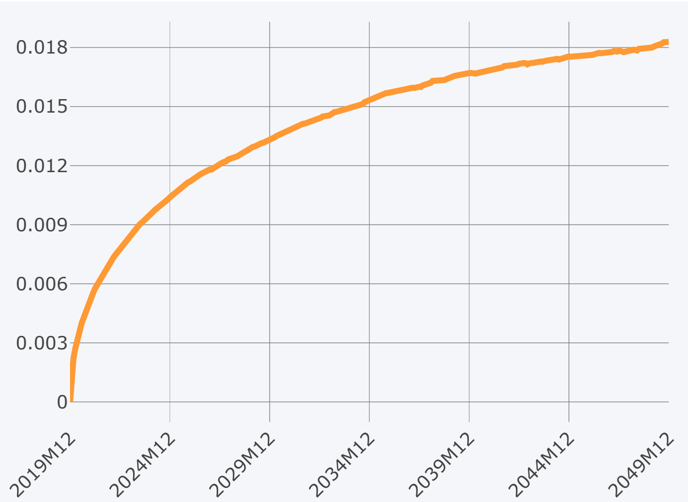
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

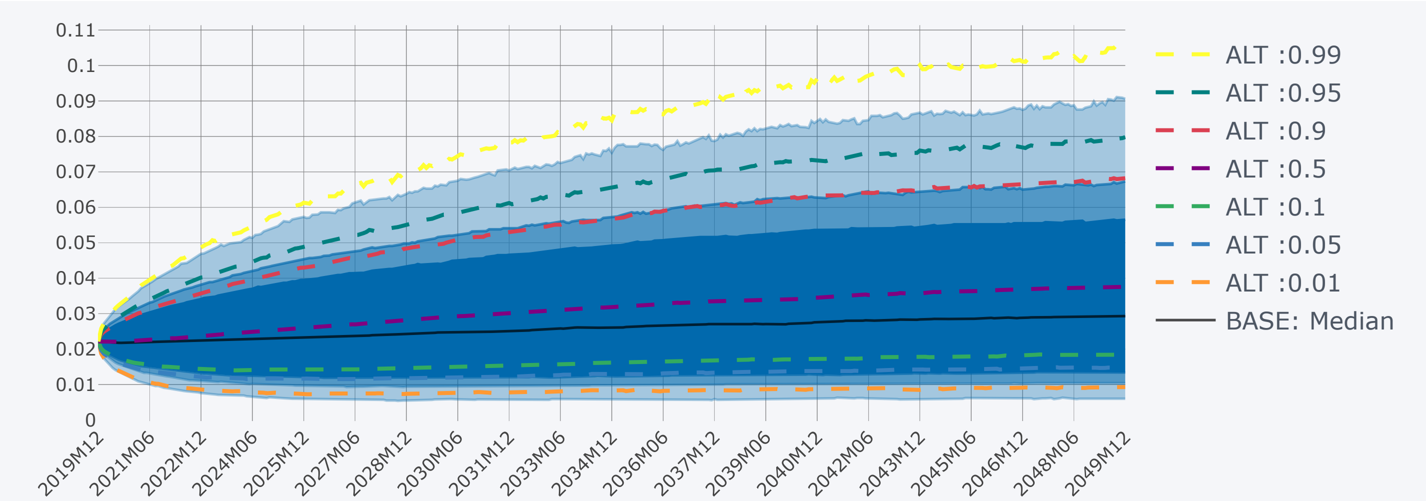
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0218	0.0326	0.0223	0.041
std	0.0052	0.0183	0.0052	0.0207
min	0.0056	-0.0008	0.006	0.0018
1%	0.0112	0.0054	0.0116	0.0088
5%	0.0139	0.01	0.0143	0.0143
10%	0.0154	0.013	0.0159	0.0181
50%	0.0215	0.0291	0.022	0.0374
90%	0.0286	0.0565	0.0292	0.0682
95%	0.0308	0.0673	0.0314	0.0799
99%	0.035	0.0906	0.0356	0.1055
max	0.0449	0.1657	0.0455	0.184

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.

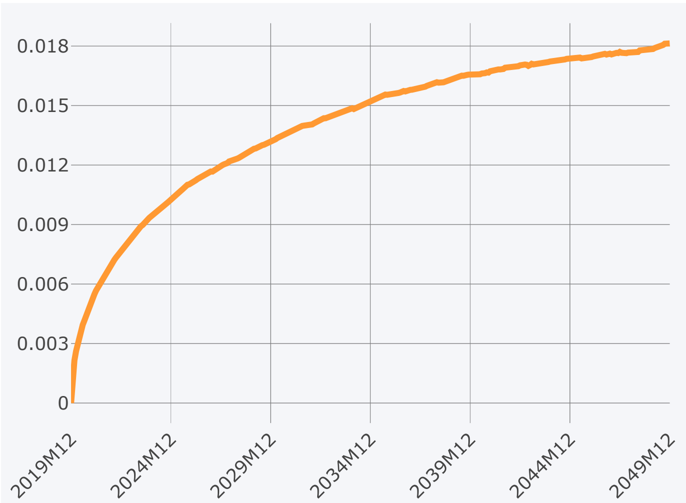
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0226	0.0412
std	0.0051	0.0181	0.0051	0.0206
min	0.0063	0.0001	0.0067	0.0026
1%	0.0116	0.006	0.012	0.0093
5%	0.0143	0.0104	0.0147	0.0147
10%	0.0158	0.0134	0.0163	0.0184
50%	0.0218	0.0293	0.0223	0.0376
90%	0.0288	0.0565	0.0293	0.0682
95%	0.0309	0.0673	0.0315	0.0798
99%	0.035	0.0906	0.0357	0.1054
max	0.0449	0.1655	0.0456	0.1838

Cross Sectional Volatility Over Time : BASE



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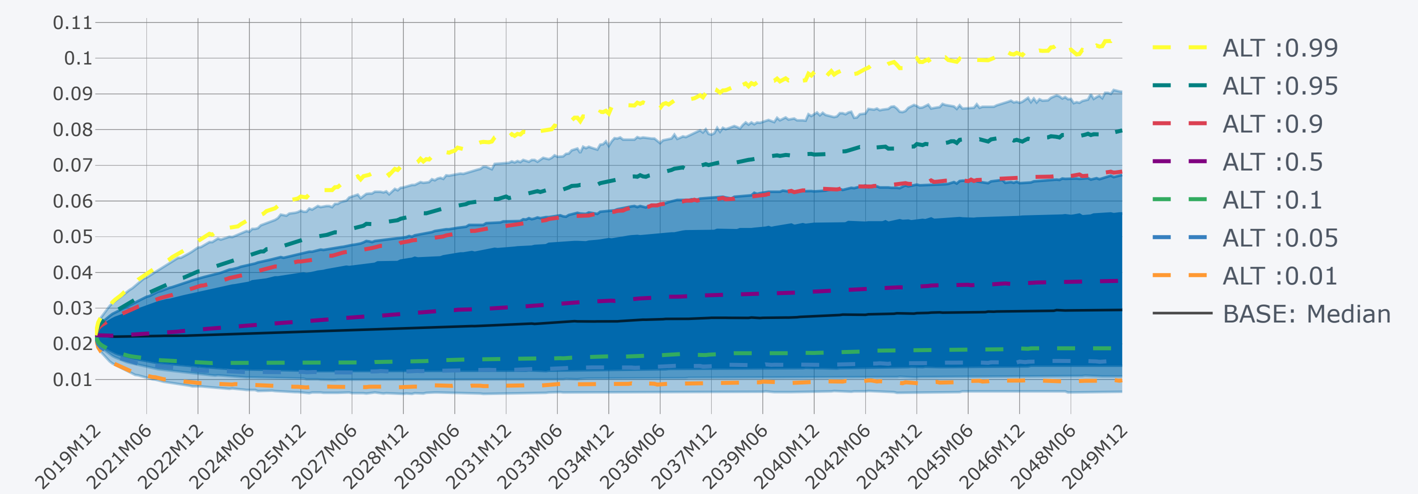
Simulated Data in Percentiles : US Treasury 20 Year Yield - Coupon



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

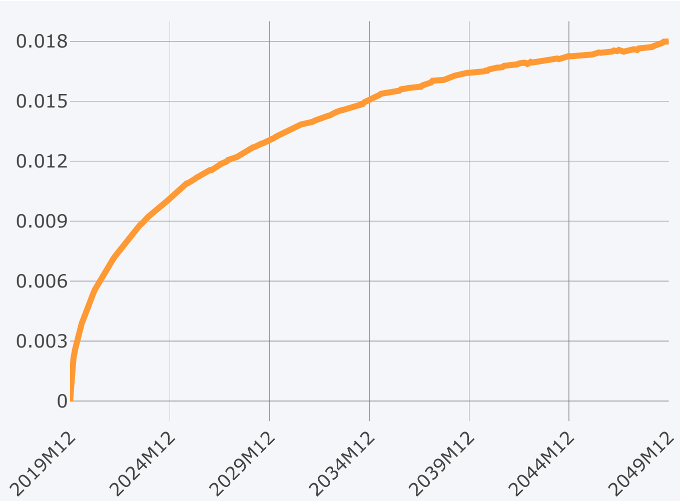
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0228	0.0414
std	0.005	0.018	0.0051	0.0205
min	0.0069	0.0009	0.0072	0.0034
1%	0.012	0.0066	0.0124	0.0098
5%	0.0147	0.0109	0.0151	0.0151
10%	0.0162	0.0139	0.0166	0.0188
50%	0.022	0.0295	0.0225	0.0377
90%	0.0289	0.0565	0.0295	0.0682
95%	0.0311	0.0673	0.0316	0.0798
99%	0.0351	0.0906	0.0357	0.1053
max	0.045	0.1653	0.0457	0.1836

Cross Sectional Volatility Over Time : BASE



US Treasury 21 Year Yield - Coupon

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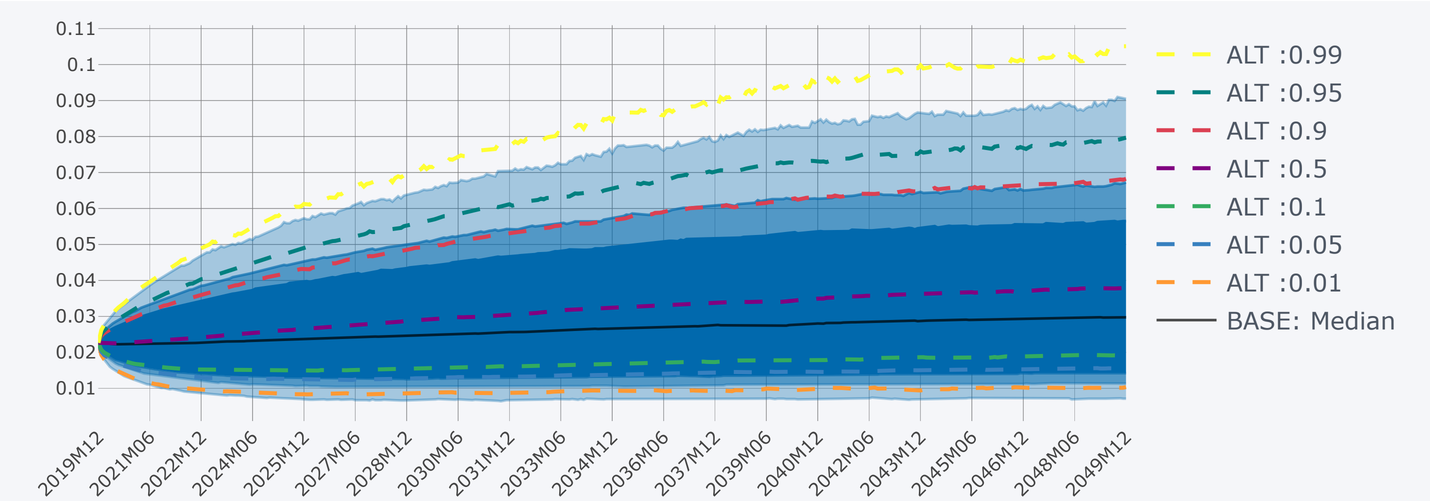
Simulated Data in Percentiles : US Treasury 21 Year Yield - Coupon



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

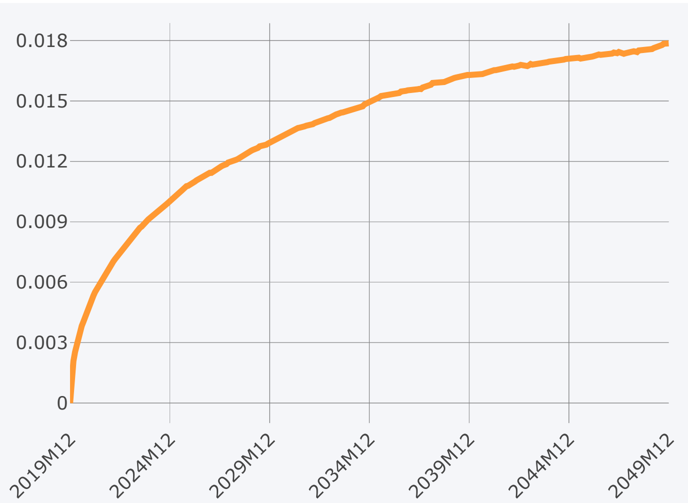
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0231	0.0415
std	0.0049	0.0179	0.005	0.0203
min	0.0074	0.0016	0.0078	0.0041
1%	0.0124	0.0071	0.0128	0.0103
5%	0.015	0.0113	0.0154	0.0155
10%	0.0165	0.0142	0.0169	0.0191
50%	0.0222	0.0297	0.0227	0.0379
90%	0.0291	0.0565	0.0296	0.0682
95%	0.0312	0.0672	0.0318	0.0797
99%	0.0351	0.0905	0.0358	0.1051
max	0.0451	0.1651	0.0457	0.1834

Cross Sectional Volatility Over Time : BASE



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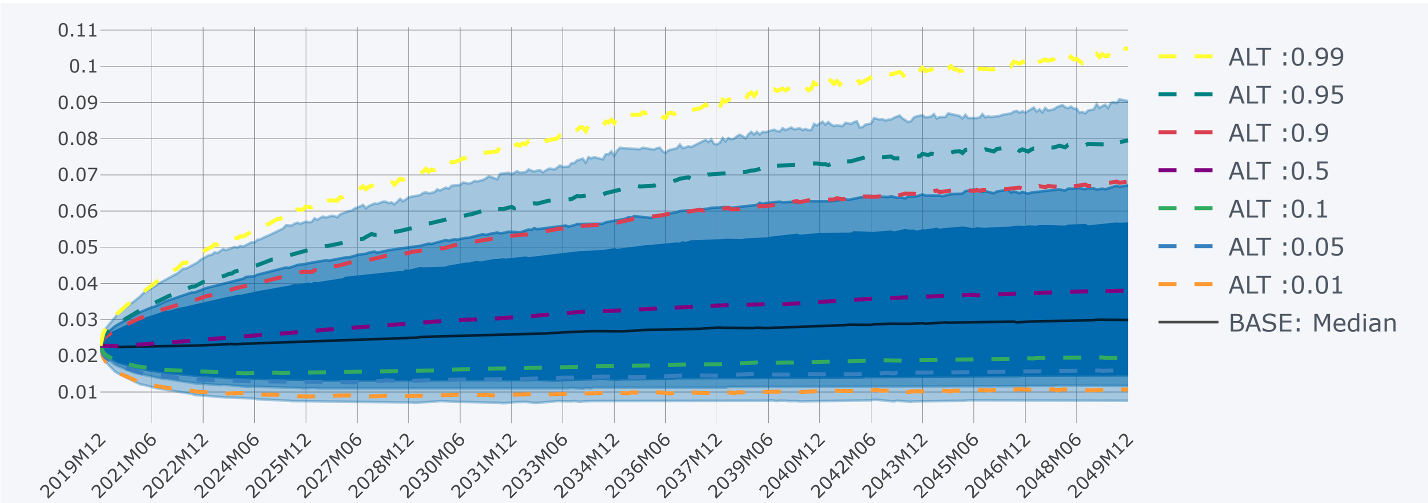
Simulated Data in Percentiles : US Treasury 22 Year Yield - Coupon



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

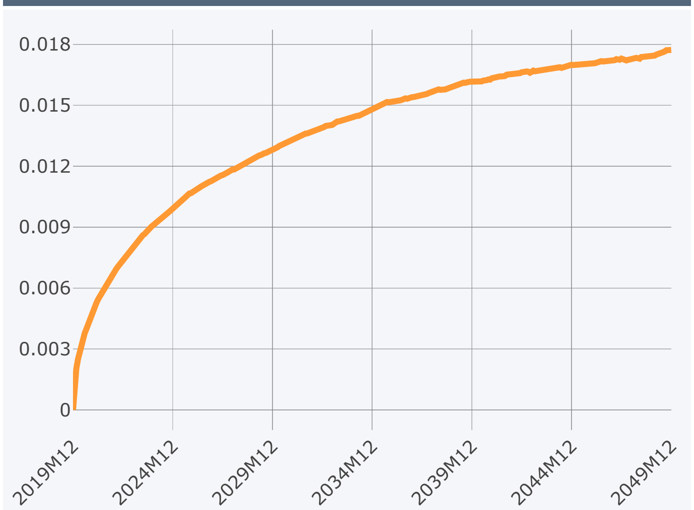
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0233	0.0417
std	0.0049	0.0177	0.0049	0.0202
min	0.008	0.0023	0.0083	0.0048
1%	0.0128	0.0076	0.0132	0.0108
5%	0.0153	0.0117	0.0158	0.0158
10%	0.0168	0.0146	0.0172	0.0194
50%	0.0225	0.0299	0.023	0.038
90%	0.0292	0.0565	0.0298	0.0682
95%	0.0313	0.0671	0.0319	0.0796
99%	0.0352	0.0904	0.0358	0.1049
max	0.0451	0.1649	0.0458	0.1833

Cross Sectional Volatility Over Time : BASE



US Treasury 23 Year Yield - Coupon

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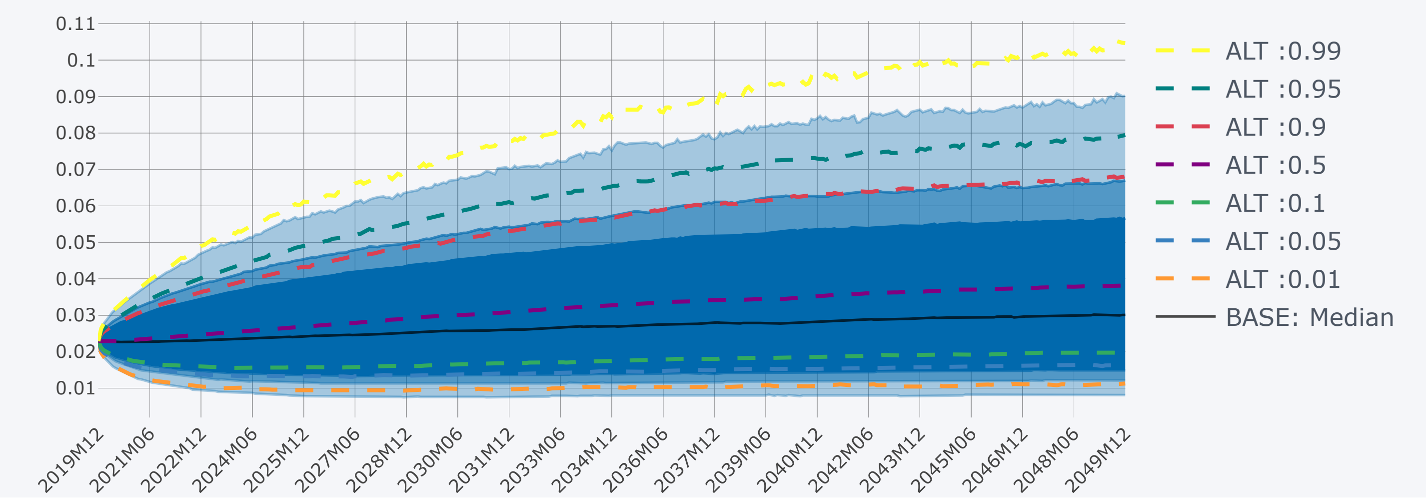
Simulated Data in Percentiles : US Treasury 23 Year Yield - Coupon



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

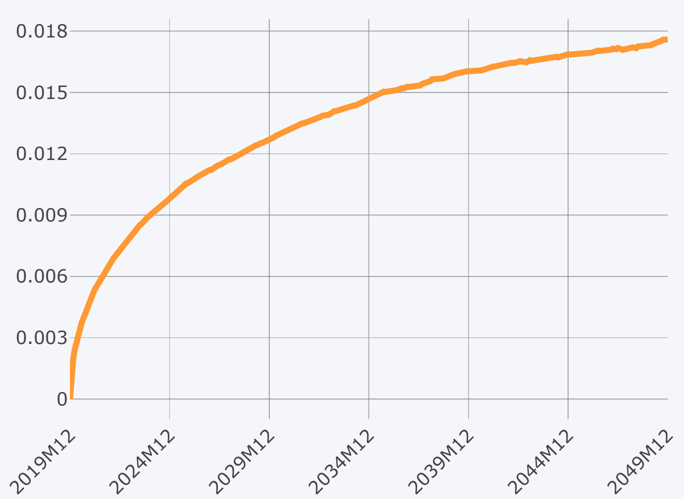
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

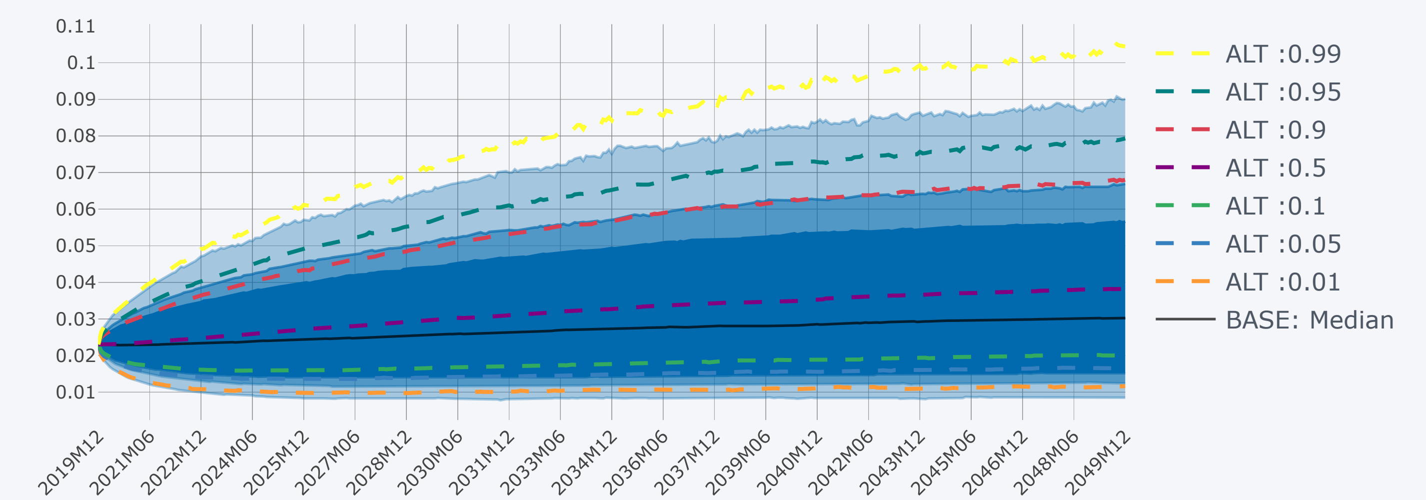
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.023	0.0336	0.0235	0.0418
std	0.0048	0.0176	0.0048	0.0201
min	0.0085	0.003	0.0088	0.0054
1%	0.0132	0.0081	0.0136	0.0113
5%	0.0157	0.0121	0.0161	0.0162
10%	0.0171	0.0149	0.0175	0.0197
50%	0.0227	0.0301	0.0232	0.0382
90%	0.0293	0.0566	0.0299	0.0681
95%	0.0314	0.067	0.032	0.0795
99%	0.0352	0.0902	0.0358	0.1047
max	0.0451	0.1647	0.0458	0.1831

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.

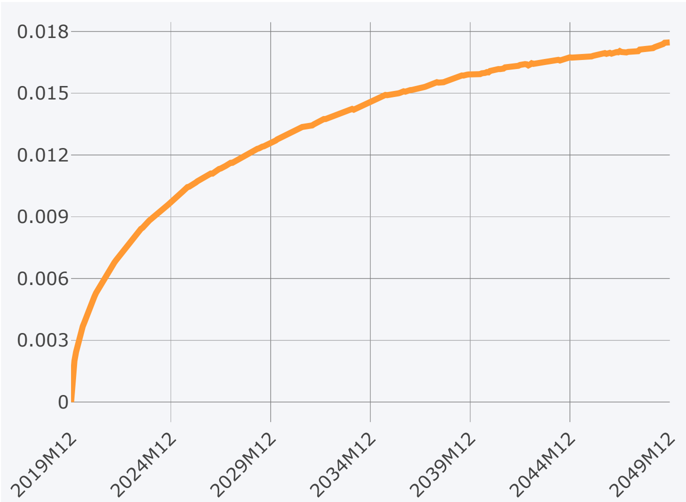
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

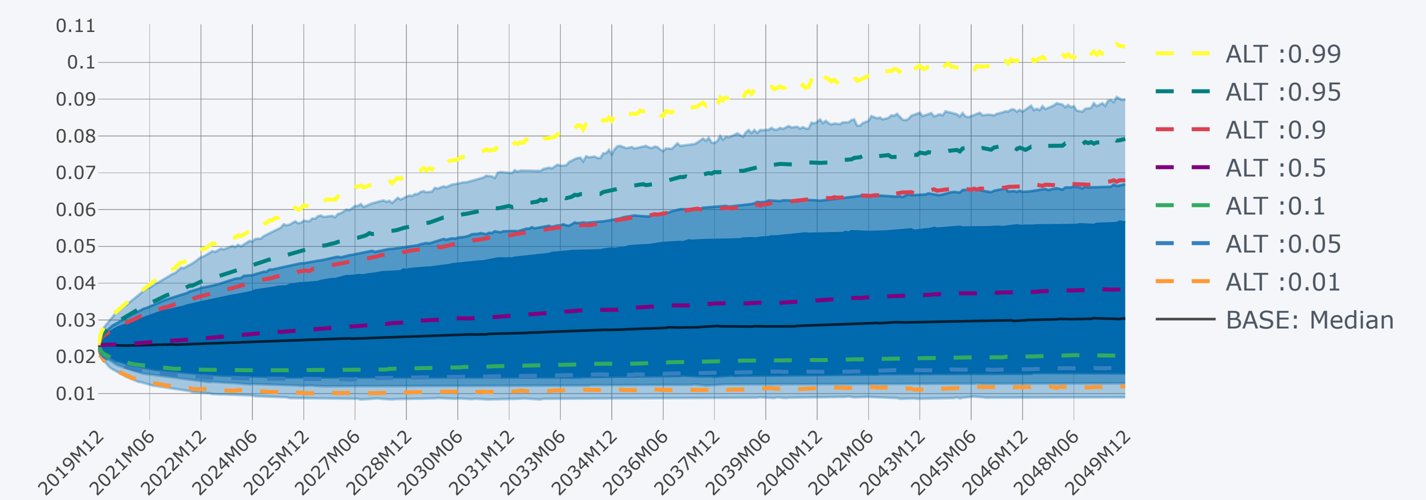
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0232	0.0338	0.0237	0.0419
std	0.0047	0.0175	0.0048	0.0199
min	0.0089	0.0036	0.0093	0.0059
1%	0.0135	0.0085	0.0139	0.0116
5%	0.016	0.0124	0.0164	0.0165
10%	0.0174	0.0152	0.0178	0.02
50%	0.0229	0.0302	0.0234	0.0382
90%	0.0295	0.0566	0.03	0.068
95%	0.0315	0.0669	0.0321	0.0793
99%	0.0353	0.0901	0.0359	0.1045
max	0.0452	0.1645	0.0458	0.1829

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.

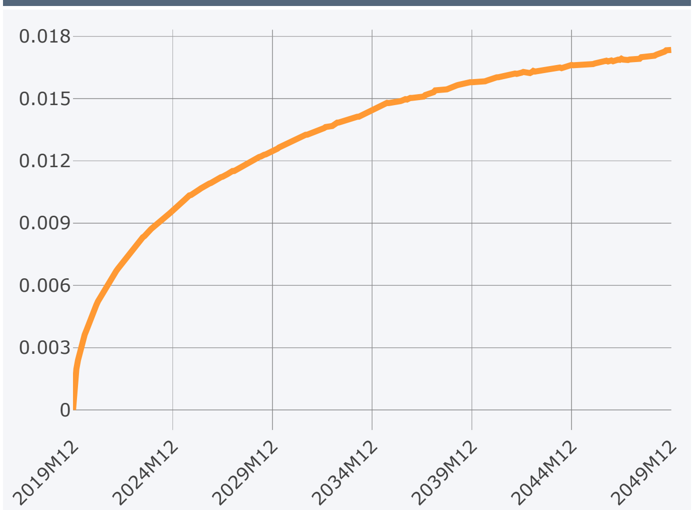
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

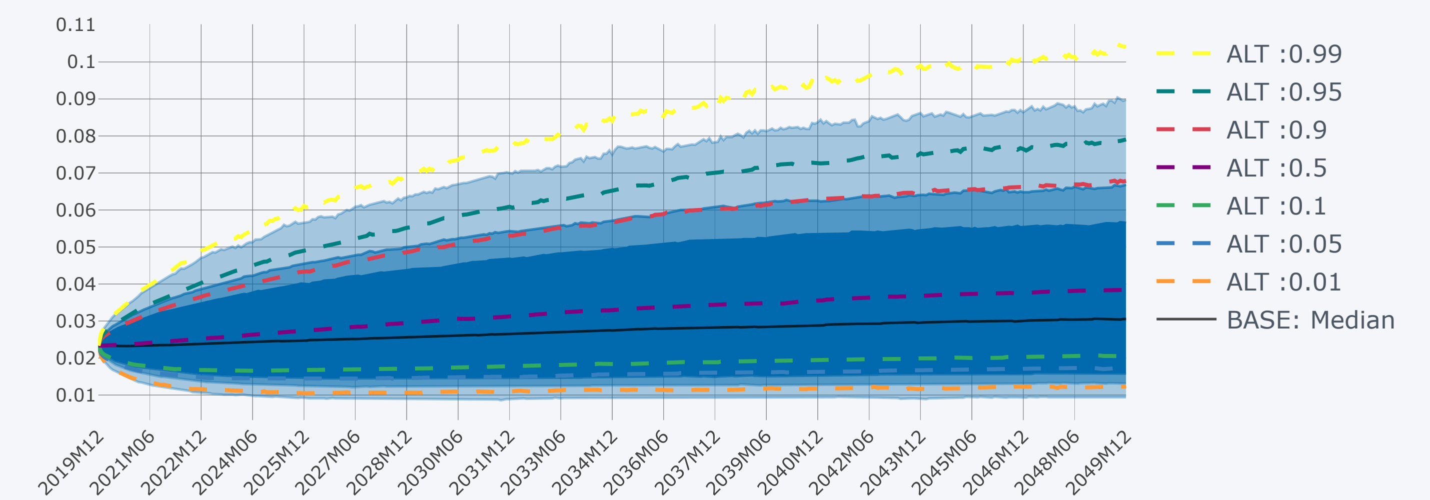
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0234	0.0339	0.0239	0.042
std	0.0047	0.0173	0.0047	0.0198
min	0.0094	0.0042	0.0097	0.0064
1%	0.0138	0.009	0.0142	0.012
5%	0.0163	0.0128	0.0167	0.0168
10%	0.0176	0.0155	0.0181	0.0203
50%	0.0231	0.0304	0.0236	0.0383
90%	0.0296	0.0565	0.0301	0.068
95%	0.0316	0.0669	0.0322	0.0792
99%	0.0354	0.09	0.036	0.1042
max	0.0452	0.1644	0.0458	0.1828

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.

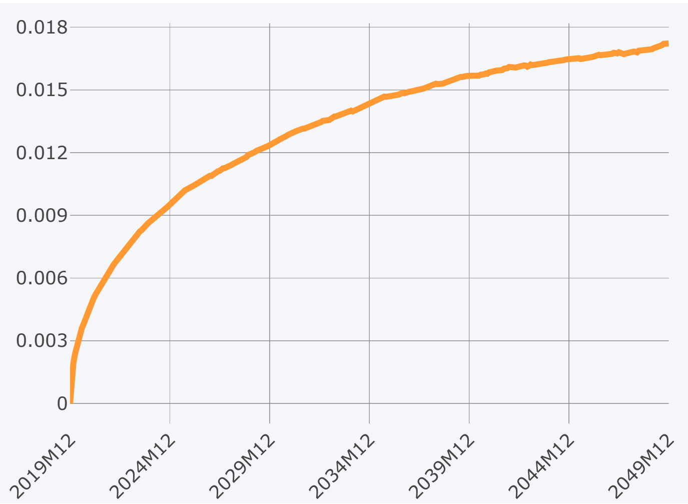
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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	0.0241	0.0421
std	0.0046	0.0172	0.0047	0.0197
min	0.0098	0.0048	0.0102	0.0068
1%	0.0141	0.0094	0.0145	0.0123
5%	0.0165	0.0131	0.0169	0.0171
10%	0.0179	0.0158	0.0183	0.0205
50%	0.0233	0.0306	0.0238	0.0384
90%	0.0297	0.0565	0.0302	0.0679
95%	0.0317	0.0668	0.0323	0.0791
99%	0.0354	0.0898	0.036	0.104
max	0.0452	0.1642	0.0458	0.1826

Cross Sectional Volatility Over Time : BASE



US Treasury 27 Year Yield - Coupon
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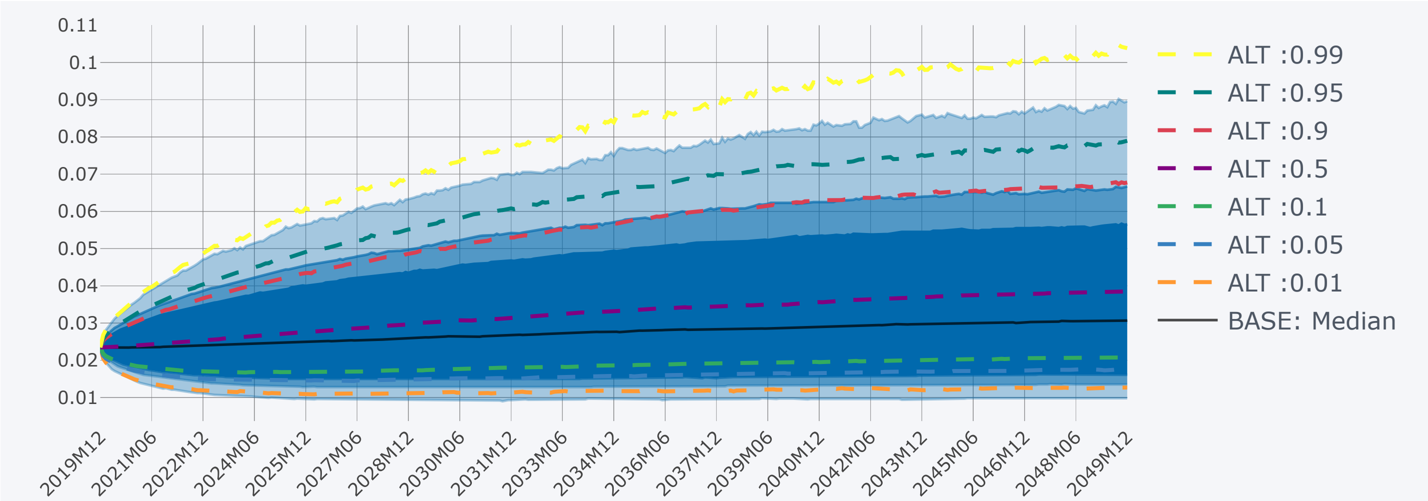
Validation Report

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.

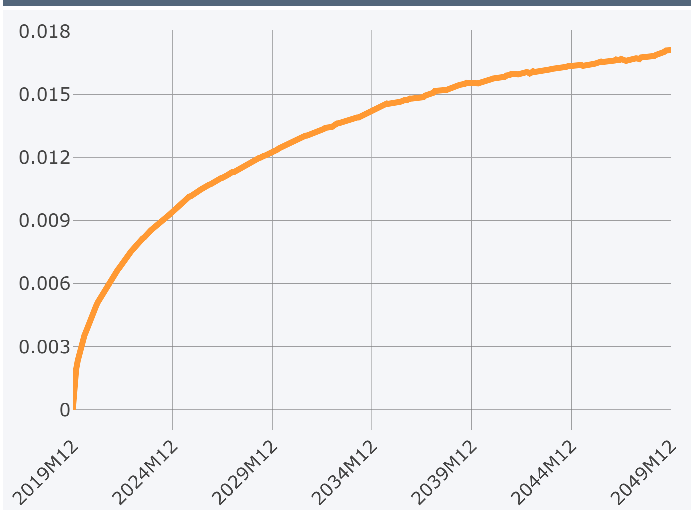
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

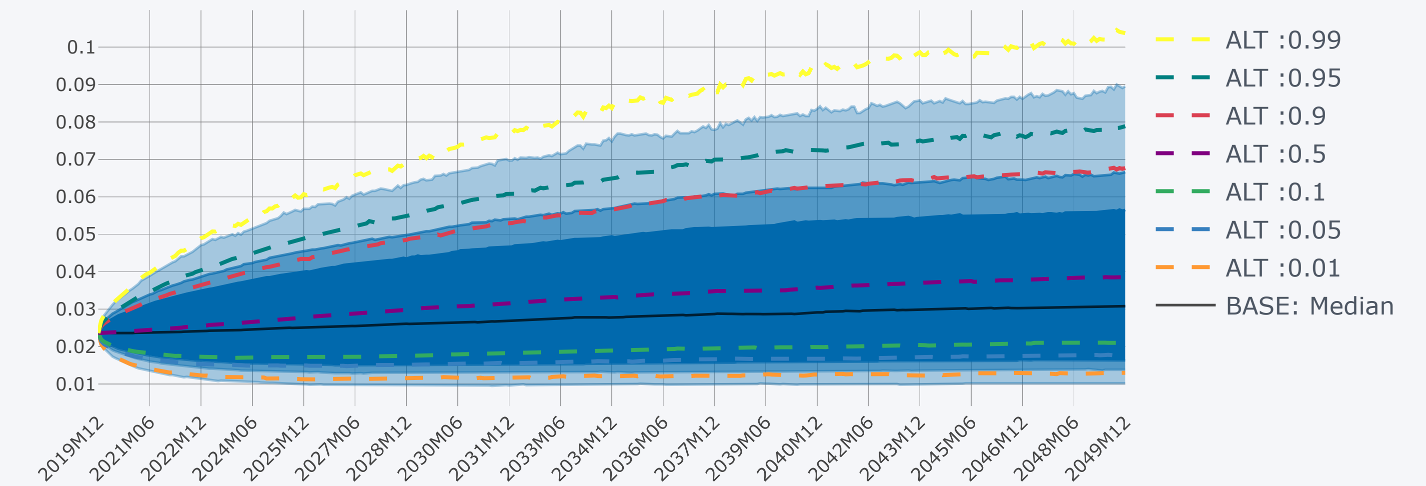
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0238	0.0342	0.0242	0.0421
std	0.0046	0.0171	0.0046	0.0196
min	0.0102	0.0053	0.0106	0.0073
1%	0.0144	0.0098	0.0149	0.0127
5%	0.0168	0.0135	0.0172	0.0174
10%	0.0181	0.0161	0.0186	0.0208
50%	0.0234	0.0307	0.0239	0.0385
90%	0.0298	0.0565	0.0303	0.0678
95%	0.0318	0.0667	0.0324	0.079
99%	0.0355	0.0896	0.0361	0.1038
max	0.0452	0.164	0.0458	0.1825

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.

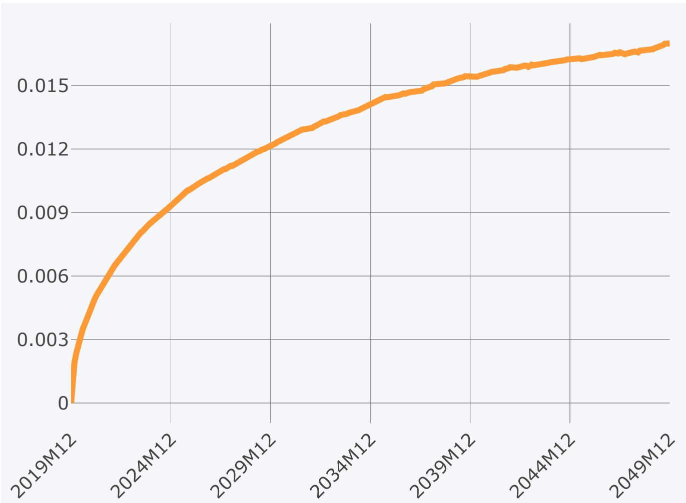
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

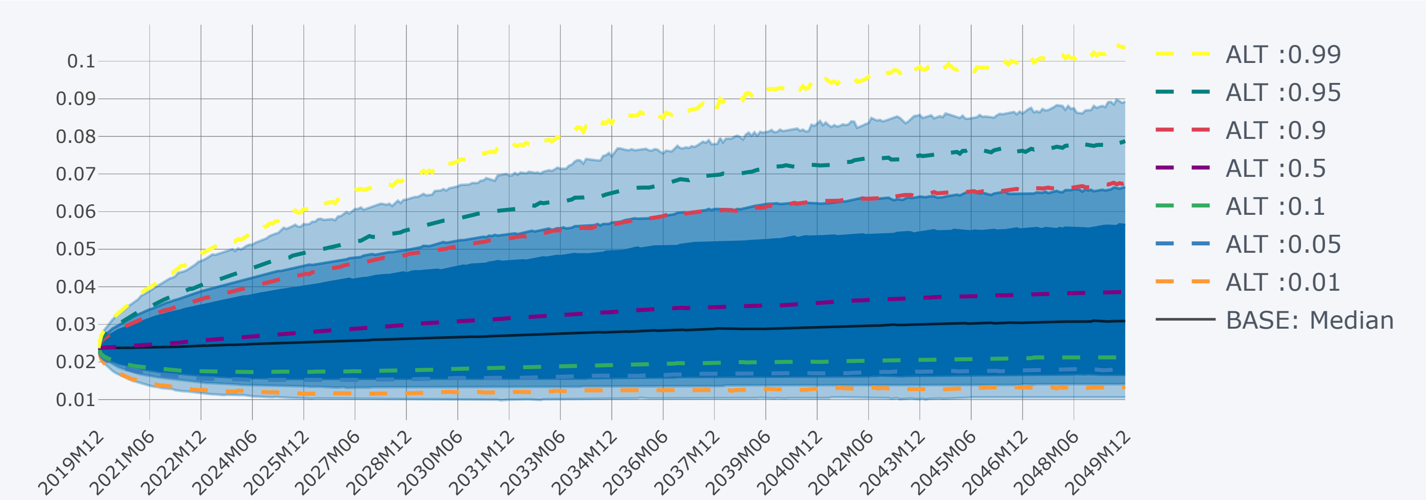
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0239	0.0343	0.0244	0.0422
std	0.0045	0.017	0.0046	0.0195
min	0.0106	0.0058	0.0109	0.0077
1%	0.0148	0.0102	0.0152	0.013
5%	0.0171	0.0138	0.0174	0.0177
10%	0.0184	0.0163	0.0188	0.021
50%	0.0236	0.0308	0.0241	0.0386
90%	0.0299	0.0565	0.0305	0.0677
95%	0.0319	0.0666	0.0324	0.0789
99%	0.0355	0.0895	0.0361	0.1037
max	0.0452	0.1639	0.0458	0.1824

Cross Sectional Volatility Over Time : BASE



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.

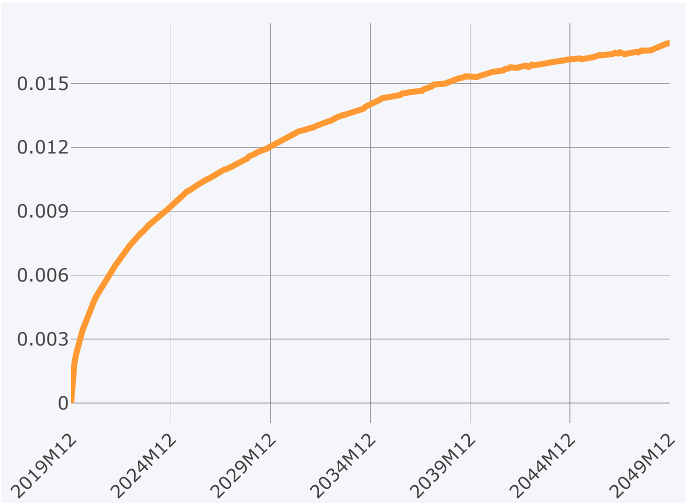
Percentiles Plotted :1%, 5%, 10%, 50%, 90%, 95%, 99%

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

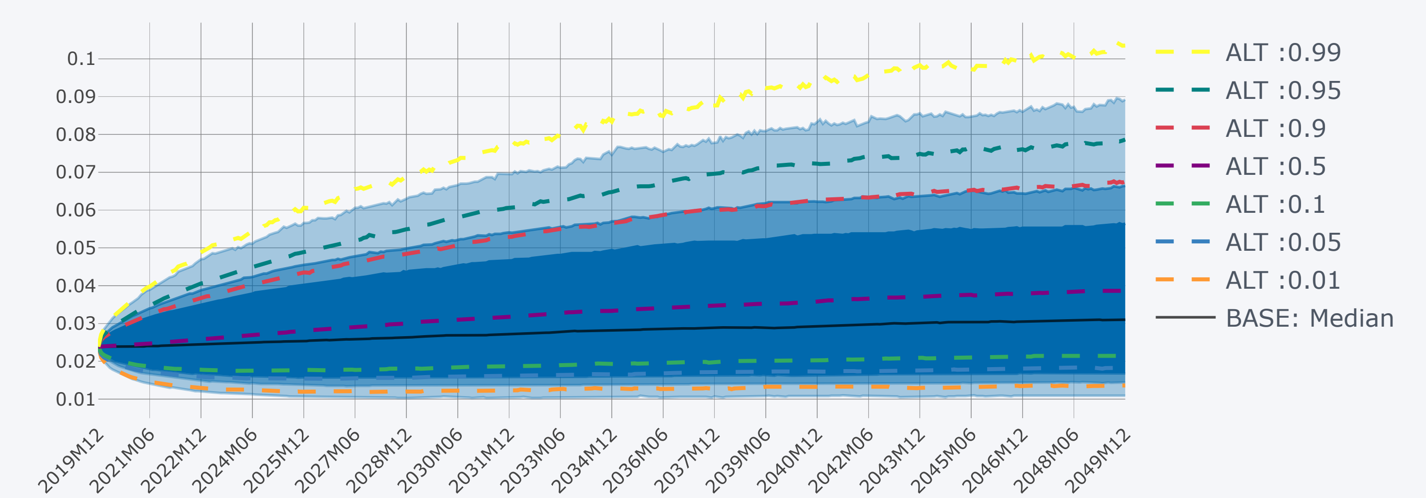
Simulation Summary

	BASE: 2020M12	BASE: 2049M12	ALT :2020M12	ALT :2049M12
mean	0.0241	0.0344	0.0246	0.0423
std	0.0045	0.0169	0.0045	0.0194
min	0.011	0.0063	0.0113	0.008
1%	0.015	0.0106	0.0154	0.0133
5%	0.0173	0.0141	0.0177	0.0179
10%	0.0186	0.0166	0.019	0.0212
50%	0.0238	0.0309	0.0243	0.0386
90%	0.03	0.0564	0.0305	0.0676
95%	0.0319	0.0665	0.0325	0.0788
99%	0.0356	0.0893	0.0362	0.1036
max	0.0452	0.1638	0.0458	0.1823

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	0.0247	0.0423
std	0.0044	0.0168	0.0045	0.0193
min	0.0113	0.0067	0.0117	0.0084
1%	0.0153	0.0109	0.0157	0.0136
5%	0.0175	0.0144	0.0179	0.0182
10%	0.0188	0.0168	0.0192	0.0214
50%	0.0239	0.031	0.0244	0.0386
90%	0.0301	0.0564	0.0306	0.0675
95%	0.032	0.0664	0.0326	0.0786
99%	0.0356	0.0892	0.0362	0.1035
max	0.0452	0.1636	0.0458	0.1822

Cross Sectional Volatility Over Time : BASE