

Today: 2023-01-11  
Par: 100  
Freq: 2

										Q3 b)		Q4			
										Comparing spot rates		1-year forward rates			
MATURITY	COUPON (%)	PRICE	Mat (yrs)	Full price	Model price	Error	Spot rate	ztp	Mat (yrs)	Bootstrapped	CubicSpline	Mat (yrs)	Bootstrapped	1/(1+Z/m)*n	Cumulative of (1+Z/m)*t
2023-04-30	2.75	99.446	0.301104972	99.9629813	99.99266214	0.00	0.046111313	-0.123636236	0.5	0.04612928	0.04609141	0.5	0.04612928	0.777702073	0.977702073
2023-06-30	2.625	99.117	0.46981326	99.1967652	99.19676511	0.00	0.045448651	0.107249041	1	0.046076901	0.047037522	1	0.046076901	0.954527866	1.932329536
2023-09-30	2.875	98.742	0.715469613	99.5600249	99.56002477	0.00	0.046777806	-0.04887	1.5	0.045007234	0.045014109	1.5	0.04704454	0.935417394	2.867747332
2023-12-31	2.625	98.047	0.96961326	98.1267652	98.12676504	0.00	0.047092666	-0.00986	2	0.042103202	0.042064817	2	0.037241106	0.920045356	3.787792688
2024-06-30	3	97.86	1.46961326	97.9511602	97.95116024	0.00	0.045187899	-0.00601	2.5	0.040289619	0.040283064	2.5	0.032323595	0.90508815	4.692880838
2024-12-31	4.25	100.031	1.96961326	100.160144	100.1601441	0.00	0.042215129	0.00826	3	0.038946243	0.038924175	3	0.032646959	0.89072841	5.583609279
2025-06-30	2.75	96.977	2.46961326	97.0605635	97.06056346	0.00	0.040373421	0.00011	3.5	0.038152269	0.038019573	3.5	0.032818683	0.876099804	6.459709082
2025-12-31	2.625	96.422	2.96961326	96.5017652	96.50176481	0.00	0.038984496	0.00239	4	0.037377099	0.037368227	4	0.032676909	0.862320287	7.322029369
2026-12-31	1.75	92.68	3.96961326	92.7331768	92.73317699	0.00	0.037406547	-0.00021	4.5	0.036892255	0.036768717	4.5	0.032489665	0.848314486	8.170343854
2027-12-31	3.875	100.922	4.96961326	101.039749	101.0397485	0.00	0.036437449	0.00215	5	0.036440532	0.036429508	5	0.032698566	0.834800371	9.005144225
2028-11-15	3.125	97.149	5.842541436	97.641058	97.64105772	0.00	0.036526	-0.00162	5.5	0.036491252	0.036479508	5.5	0.034686388	0.819637679	9.824781904
2029-12-31	3.875	101.586	6.96961326	101.703749	101.7037488	0.00	0.035899327	0.00058	6	0.03643845	0.036498222	6	0.03642804	0.805201338	10.62998324
2032-11-15	4.125	104.696	9.842541436	105.345517	105.3455159	0.00	0.035259238	-0.00028	6.5	0.036160441	0.036231133	6.5	0.034341939	0.792198473	11.42218172
2036-02-15	4.5	110.243	13.0951087	112.065011	112.0650118	0.00	0.034843304	0.00074	7	0.035892557	0.035880085	7	0.032620273	0.779564356	12.20174607
2037-02-15	4.75	112.961	14.0951087	114.884234	114.8842355	0.00	0.035592742	-0.00007	7.5	0.035781157	0.035623931	7.5	0.033317534	0.766449563	12.96819563
2038-02-15	4.375	108.61	15.0951087	110.381399	110.3813999	0.00	0.036395805	-0.000195553	8	0.035699757	0.035490986	8	0.034110837	0.753637912	13.72183355
2039-02-15	3.5	97.829	16.0951087	99.2461196	99.24611977	0.00	0.037041771	-0.00027454	8.5	0.035558357	0.035416348	8.5	0.033888132	0.741121561	14.46295511
2040-08-15	3.875	101.704	17.5951087	103.272954	103.2729531	0.00	0.037908187	0.000742079	9	0.035446957	0.035371643	9	0.033665432	0.728892893	15.191848
2041-08-15	3.75	99.149	18.5951087	100.667342	100.6673422	0.00	0.038902901	-0.000795966	9.5	0.035335556	0.035319146	9.5	0.033442738	0.716944513	15.90879251
2043-11-15	3.75	98.118	20.84254144	98.7084696	98.70846902	0.00	0.03982837	0.000413835	10	0.035239103	0.035221618	10	0.033369371	0.705165656	16.61395817
2044-02-15	3.625	96.18	21.0951087	97.647731	97.64773086	0.00	0.039933437	-0.001009832	10.5	0.035175163	0.035069343	10.5	0.033652057	0.693413409	17.30737158
2045-05-15	3	86.657	22.34254144	87.1293757	87.1293752	0.00	0.039832619	-4.48357E-05	11	0.035111224	0.03489742	11	0.033832879	0.681899883	17.98927146
2047-02-15	3	86.516	24.0951087	87.7306739	87.73067377	0.00	0.039264225	3.86362E-05	11.5	0.035047285	0.034745086	11.5	0.033705043	0.670619682	18.65989114
2048-11-15	3.375	92.977	25.84254144	93.5084227	93.50842169	0.00	0.038332967	-0.000826084	12	0.034983345	0.034651497	12	0.03357721	0.659657542	19.31945869
2049-02-15	3	86.993	26.0951087	88.2076739	88.20767322	0.00	0.038065876	0.0003551	12.5	0.034919406	0.034655931	12.5	0.033449378	0.648738327	19.96819701
2052-11-15	4	105.711	29.84254144	106.340834	106.3408345	0.00	0.036240395	0.00021291	13	0.034855466	0.034797585	13	0.033321549	0.638127028	20.60632404
									13.5	0.035146745	0.035103339	13.5	0.03799063	0.624777213	21.23110126
									14	0.03521464	0.035511708	14	0.044199296	0.610830427	21.84193168
									14.5	0.035917895	0.035930606	14.5	0.046357067	0.596791106	22.453672279
									15	0.036319426	0.036324574	15	0.0475238	0.582604286	23.02152707
									15.5	0.036657351	0.036682494	15.5	0.047409688	0.56947259	23.59099966
									16	0.036980334	0.0369902	16	0.046919729	0.556392291	24.14739195
									16.5	0.037275641	0.037241099	16.5	0.046883172	0.543684192	24.69107615
									17	0.037564446	0.037492081	17	0.046933052	0.5311170342	25.22224649
									17.5	0.037853252	0.037827749	17.5	0.047407509	0.518787785	25.74104427
									18	0.038310938	0.03830631	18	0.051043232	0.505061403	26.24610568
									18.5	0.038808295	0.038818387	18.5	0.055594199	0.491115157	26.73722083
									19	0.039096931	0.039189014	19	0.052774493	0.479426115	27.21664695
									19.5	0.039275226	0.039415435	19.5	0.04793863	0.468391983	27.68503893
									20	0.039481421	0.039554641	20	0.047321237	0.457519591	28.14255852
									20.5	0.039687315	0.03970392	20.5	0.047733848	0.446809529	28.58936805
									21	0.039893872	0.039896542	21	0.048160447	0.436256325	29.02562437
									21.5	0.039900714	0.040002085	21.5	0.044280304	0.427662853	29.45328723
									22	0.039863303	0.039939793	22	0.039155478	0.419663353	29.87295058
									22.5	0.039781552	0.039783374	22.5	0.037221252	0.41217183	30.28512886
									23	0.039619391	0.039621758	23	0.034326521	0.405620332	30.69074921
									23.5	0.039457231	0.039456761	23.5	0.032173632	0.399230297	31.08997951
									24	0.03929507	0.039294337	24	0.03184991	0.393003537	31.48298305
									24.5	0.039048446	0.039134439	24.5	0.029465562	0.387721702	31.87070475
									25	0.038781982	0.038934031	25	0.026506504	0.382788879	32.25349463
									25.5	0.038515517	0.038631336	25.5	0.02550217	0.378019912	32.63151454
									26	0.038166455	0.038167859	26	0.022838545	0.374195015	33.00570956
									26.5	0.037868644	0.03786431	26.5	0.021442561	0.370042714	33.37575227
									27	0.03762508	0.037244801	27	0.023598673	0.365518016	33.74127028
									27.5	0.037381515	0.036952099	27.5	0.024514936	0.361135247	34.10240553
									28	0.03713795	0.036641091	28	0.024029394	0.356890632	34.45929616
									28.5	0.036894386	0.036447469	28.5	0.023543881	0.352780536	34.8120767
									29	0.036650821	0.036319721	29	0.023058397	0.348801466	35.16087817
									29.5	0.036407257	0.036253138	29.5	0.022572943	0.344950057	35.50582822
									30	0.036240395	0.03624301	30	0.024373938	0.340452727	35.84628055

