

II. Term structure of interest rates in the debt securities market *

a) Term structure of interest rates in the debt securities market - estimated values, listed Federal securities

% per annum

Interest rate at a residual maturity of ... years										
End of year or month or trading day	1	2	3	4	5	6	7	8	9	10
2015	– 0.39	– 0.35	– 0.26	– 0.14	– 0.01	– 0.13	– 0.28	– 0.42	– 0.56	– 0.70
2016	– 0.84	– 0.80	– 0.76	– 0.65	– 0.51	– 0.35	– 0.18	– 0.03	– 0.10	– 0.22
2017	– 0.72	– 0.64	– 0.50	– 0.34	– 0.18	– 0.02	– 0.12	– 0.25	– 0.37	– 0.48
2018	– 0.70	– 0.65	– 0.56	– 0.44	– 0.31	– 0.18	– 0.06	– 0.06	– 0.16	– 0.25
2019	– 0.69	– 0.63	– 0.58	– 0.54	– 0.49	– 0.44	– 0.37	– 0.31	– 0.25	– 0.19
2020	– 0.73	– 0.75	– 0.77	– 0.77	– 0.75	– 0.72	– 0.68	– 0.65	– 0.61	– 0.57
2021	– 0.73	– 0.68	– 0.62	– 0.56	– 0.50	– 0.44	– 0.38	– 0.33	– 0.28	– 0.24
2022	2.39	2.59	2.55	2.50	2.47	2.47	2.48	2.50	2.51	2.53
2023	2.97	2.35	2.04	1.91	1.87	1.88	1.92	1.96	2.01	2.06
2024	2.17	2.02	2.02	2.06	2.13	2.20	2.27	2.33	2.38	2.43
2025	2.02	2.11	2.21	2.32	2.44	2.55	2.66	2.76	2.85	2.94
2025 Feb.	2.07	1.97	1.97	2.02	2.08	2.15	2.23	2.30	2.36	2.42
Mar.	2.01	1.97	2.03	2.13	2.25	2.37	2.48	2.58	2.67	2.75
Apr.	1.75	1.70	1.78	1.89	2.01	2.13	2.24	2.35	2.44	2.52
May	1.78	1.77	1.85	1.96	2.08	2.20	2.31	2.41	2.50	2.59
June	1.82	1.84	1.92	2.03	2.15	2.26	2.37	2.47	2.56	2.65
July	1.90	1.95	2.04	2.14	2.25	2.36	2.47	2.57	2.66	2.75
Aug.	1.89	1.92	2.00	2.10	2.21	2.33	2.45	2.56	2.67	2.76
Sep.	1.96	2.01	2.08	2.18	2.28	2.39	2.49	2.59	2.69	2.78
Oct.	1.92	1.97	2.05	2.14	2.24	2.34	2.44	2.54	2.63	2.71
Nov.	1.96	2.01	2.09	2.18	2.28	2.38	2.48	2.58	2.68	2.77
Dec.	2.02	2.11	2.21	2.32	2.44	2.55	2.66	2.76	2.85	2.94
2026 Jan.	2.00	2.07	2.16	2.27	2.38	2.50	2.61	2.72	2.82	2.92
Feb.	2.00	2.02	2.08	2.16	2.25	2.36	2.46	2.57	2.66	2.76
Mar.	2.51	2.62	2.62	2.65	2.72	2.79	2.88	2.96	3.03	3.10
Apr.	2.59	2.71	2.73	2.75	2.80	2.88	2.96	3.04	3.11	3.18
May	2.45	2.53	2.55	2.59	2.64	2.71	2.80	2.88	2.96	3.04
June	2.46	2.50	2.50	2.52	2.57	2.63	2.70	2.78	2.86	2.93
July	2.66	2.76	2.79	2.82	2.86	2.93	3.00	3.07	3.15	3.21
2026 July 6	2.44	2.50	2.53	2.57	2.63	2.70	2.78	2.86	2.94	3.02
7	2.48	2.55	2.59	2.63	2.68	2.75	2.83	2.92	2.99	3.07
8	2.57	2.66	2.69	2.72	2.78	2.85	2.93	3.01	3.09	3.16
9	2.57	2.66	2.69	2.73	2.78	2.85	2.93	3.01	3.09	3.17
10	2.56	2.63	2.66	2.70	2.75	2.82	2.90	2.98	3.06	3.13
13	2.58	2.66	2.69	2.72	2.77	2.84	2.91	2.99	3.07	3.14
14	2.66	2.75	2.77	2.80	2.84	2.90	2.96	3.04	3.11	3.18
15	2.62	2.73	2.75	2.78	2.82	2.89	2.96	3.04	3.11	3.18
16	2.63	2.73	2.76	2.79	2.84	2.90	2.98	3.05	3.13	3.20
17	2.65	2.75	2.77	2.79	2.83	2.90	2.97	3.04	3.12	3.19
20	2.66	2.76	2.78	2.80	2.85	2.91	2.98	3.05	3.13	3.20
21	2.65	2.75	2.78	2.81	2.85	2.92	2.99	3.06	3.14	3.21
22	2.67	2.79	2.82	2.84	2.88	2.94	3.01	3.08	3.16	3.23
23	2.72	2.85	2.88	2.89	2.93	2.98	3.05	3.12	3.19	3.25
24	2.70	2.83	2.85	2.88	2.92	2.97	3.04	3.11	3.18	3.24
27	2.66	2.77	2.79	2.81	2.85	2.91	2.98	3.05	3.12	3.19
28	2.64	2.74	2.76	2.78	2.83	2.89	2.96	3.03	3.10	3.17
29	2.65	2.75	2.78	2.80	2.84	2.90	2.97	3.05	3.12	3.18
30	2.66	2.77	2.80	2.84	2.88	2.95	3.02	3.10	3.17	3.24
31	2.66	2.76	2.79	2.82	2.86	2.93	3.00	3.07	3.15	3.21
Aug. 3	2.65	2.75	2.77	2.80	2.85	2.92	2.99	3.07	3.14	3.21
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments										
2026 July 31	2.66	2.76	2.79	2.81	2.86	2.92	2.98	3.05	3.12	3.18
Parameters for calculating the term structure of interest rates										
	Beta0	Beta1	Beta2	Beta3	Tau1	Tau2				
2026 July 28	4.00081	– 1.77575	28.28719	– 29.74256	1.62780	1.74520				
29	3.99737	– 1.75874	28.26928	– 29.68506	1.61500	1.73049				
30	4.06669	– 1.82197	28.24908	– 29.70795	1.61349	1.72752				
31	4.05329	– 1.80184	28.21709	– 29.70556	1.63414	1.75039				
Aug. 3	4.05691	– 1.78861	28.13320	– 29.70365	1.64397	1.75880				

* Interest rates on (theoretical) zero coupon bonds without a default risk, estimated according to the procedure outlined in the explanatory notes. The estimates are based on the prices of Federal bonds, five-year Federal notes and Federal Treasury notes with

a residual maturity of at least three months. The interest rates are estimated using a non-linear, parametric approach.

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still: a) Term structure of interest rates in the debt securities market - estimated values, listed Federal securities

% per annum

Interest rate at a residual maturity of ... years										
End of year or month or trading day	11	12	13	14	15	16	17	18	19	20
2015	0.82	0.94	1.04	1.14	1.22	1.30	1.36	1.41	1.46	1.50
2016	0.33	0.42	0.49	0.56	0.62	0.67	0.72	0.76	0.80	0.83
2017	0.57	0.66	0.74	0.81	0.87	0.92	0.97	1.02	1.06	1.10
2018	0.33	0.40	0.47	0.52	0.57	0.62	0.66	0.69	0.73	0.76
2019	–	0.14	–	0.04	0.00	0.04	0.07	0.11	0.13	0.16
2020	–	0.53	–	0.46	–	0.43	–	0.37	–	0.30
2021	–	0.20	–	0.13	–	0.10	–	0.03	–	0.01
2022	2.55	2.56	2.57	2.57	2.58	2.58	2.57	2.57	2.56	2.55
2023	2.11	2.15	2.19	2.22	2.25	2.27	2.28	2.30	2.30	2.31
2024	2.48	2.52	2.55	2.58	2.60	2.62	2.63	2.64	2.65	2.65
2025	3.02	3.09	3.16	3.22	3.27	3.31	3.35	3.38	3.41	3.44
2025 Feb.	2.47	2.52	2.56	2.59	2.62	2.64	2.66	2.67	2.68	2.69
Mar.	2.82	2.87	2.92	2.96	2.99	3.02	3.04	3.05	3.06	3.07
Apr.	2.60	2.66	2.72	2.76	2.80	2.84	2.86	2.89	2.90	2.91
May	2.66	2.73	2.79	2.84	2.88	2.92	2.95	2.98	3.00	3.01
June	2.72	2.78	2.84	2.89	2.93	2.97	3.00	3.02	3.04	3.06
July	2.82	2.89	2.94	2.99	3.03	3.07	3.10	3.12	3.14	3.15
Aug.	2.85	2.93	2.99	3.05	3.10	3.15	3.18	3.21	3.24	3.26
Sep.	2.86	2.93	2.99	3.04	3.09	3.13	3.17	3.20	3.22	3.25
Oct.	2.79	2.86	2.92	2.98	3.03	3.07	3.11	3.14	3.16	3.18
Nov.	2.85	2.92	2.99	3.05	3.10	3.15	3.19	3.23	3.26	3.28
Dec.	3.02	3.09	3.16	3.22	3.27	3.31	3.35	3.38	3.41	3.44
2026 Jan.	3.00	3.08	3.15	3.21	3.27	3.32	3.36	3.40	3.43	3.46
Feb.	2.84	2.92	2.99	3.06	3.12	3.17	3.21	3.25	3.28	3.31
Mar.	3.16	3.21	3.25	3.29	3.32	3.35	3.38	3.40	3.43	3.45
Apr.	3.24	3.30	3.35	3.39	3.43	3.46	3.49	3.52	3.54	3.56
May	3.10	3.16	3.22	3.27	3.31	3.35	3.38	3.41	3.44	3.46
June	2.99	3.06	3.11	3.16	3.20	3.24	3.28	3.31	3.34	3.36
July	3.28	3.33	3.38	3.43	3.47	3.50	3.54	3.56	3.59	3.61
2026 July 6	3.09	3.15	3.20	3.25	3.30	3.34	3.38	3.41	3.44	3.46
7	3.14	3.20	3.25	3.30	3.35	3.39	3.42	3.46	3.49	3.51
8	3.23	3.29	3.34	3.39	3.43	3.47	3.50	3.53	3.56	3.59
9	3.23	3.29	3.35	3.40	3.44	3.48	3.51	3.54	3.57	3.60
10	3.20	3.26	3.31	3.36	3.41	3.45	3.48	3.51	3.54	3.57
13	3.21	3.27	3.32	3.37	3.41	3.45	3.49	3.52	3.55	3.57
14	3.24	3.30	3.35	3.40	3.44	3.47	3.51	3.54	3.56	3.59
15	3.25	3.31	3.36	3.41	3.45	3.49	3.52	3.55	3.58	3.60
16	3.27	3.33	3.38	3.43	3.47	3.51	3.54	3.57	3.60	3.62
17	3.25	3.31	3.36	3.41	3.45	3.49	3.52	3.55	3.58	3.60
20	3.26	3.32	3.37	3.41	3.45	3.49	3.52	3.55	3.58	3.60
21	3.27	3.33	3.38	3.43	3.47	3.51	3.54	3.57	3.60	3.62
22	3.29	3.34	3.40	3.44	3.48	3.52	3.55	3.58	3.60	3.63
23	3.31	3.37	3.41	3.46	3.49	3.53	3.56	3.58	3.61	3.63
24	3.30	3.36	3.41	3.45	3.49	3.52	3.55	3.58	3.60	3.62
27	3.25	3.31	3.36	3.40	3.44	3.48	3.51	3.54	3.56	3.58
28	3.23	3.29	3.34	3.38	3.42	3.46	3.49	3.52	3.54	3.56
29	3.24	3.30	3.35	3.39	3.43	3.46	3.50	3.52	3.55	3.57
30	3.30	3.36	3.41	3.45	3.49	3.53	3.56	3.59	3.61	3.63
31	3.28	3.33	3.38	3.43	3.47	3.50	3.54	3.56	3.59	3.61
Aug. 3	3.27	3.33	3.38	3.42	3.47	3.50	3.53	3.56	3.59	3.61
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments										
2026 July 31	3.23	3.28	3.33	3.36	3.40	3.43	3.45	3.48	3.50	3.52
Parameters for calculating the term structure of interest rates										
	Beta0	Beta1	Beta2	Beta3	Tau1	Tau2				
2026 July 28	4.00081	– 1.77575	28.28719	– 29.74256	1.62780	1.74520				
29	3.99737	– 1.75874	28.26928	– 29.68506	1.61500	1.73049				
30	4.06669	– 1.82197	28.24908	– 29.70795	1.61349	1.72752				
31	4.05329	– 1.80184	28.21709	– 29.70556	1.63414	1.75039				
Aug. 3	4.05691	– 1.78861	28.13320	– 29.70365	1.64397	1.75880				

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a residual maturity of at least three months. The interest rates are estimated using a non-linear, parametric approach.

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% per annum

Interest rate at a residual maturity of ... years										
End of year or month or trading day	21	22	23	24	25	26	27	28	29	30
2015	1.53	1.56	1.57	1.59	1.59	1.60	1.60	1.59	1.59	1.58
2016	0.86	0.89	0.91	0.94	0.96	0.98	1.00	1.01	1.03	1.04
2017	1.13	1.16	1.19	1.22	1.24	1.26	1.28	1.30	1.32	1.34
2018	0.78	0.81	0.83	0.85	0.87	0.89	0.90	0.92	0.93	0.95
2019	0.21	0.23	0.25	0.26	0.28	0.29	0.31	0.32	0.33	0.34
2020	–	0.26	–	0.23	–	0.19	–	0.17	–	0.15
2021	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.12
2022	2.53	2.52	2.50	2.48	2.47	2.45	2.43	2.41	2.39	2.36
2023	2.31	2.31	2.30	2.30	2.29	2.28	2.27	2.25	2.24	2.22
2024	2.65	2.65	2.65	2.64	2.64	2.63	2.62	2.61	2.60	2.59
2025	3.46	3.48	3.49	3.50	3.51	3.52	3.53	3.53	3.53	3.54
2025 Feb.	2.69	2.69	2.69	2.69	2.68	2.67	2.66	2.65	2.64	2.62
Mar.	3.08	3.08	3.08	3.08	3.08	3.07	3.07	3.06	3.05	3.05
Apr.	2.92	2.93	2.93	2.92	2.92	2.91	2.90	2.89	2.87	2.86
May	3.02	3.03	3.04	3.04	3.04	3.03	3.03	3.02	3.01	3.00
June	3.07	3.08	3.08	3.08	3.08	3.08	3.07	3.07	3.06	3.05
July	3.16	3.17	3.18	3.18	3.18	3.18	3.18	3.18	3.18	3.17
Aug.	3.28	3.30	3.31	3.32	3.33	3.33	3.34	3.34	3.34	3.35
Sep.	3.26	3.28	3.29	3.29	3.30	3.30	3.31	3.31	3.31	3.31
Oct.	3.20	3.22	3.23	3.23	3.24	3.24	3.25	3.25	3.25	3.25
Nov.	3.30	3.32	3.33	3.35	3.35	3.36	3.37	3.37	3.37	3.37
Dec.	3.46	3.48	3.49	3.50	3.51	3.52	3.53	3.53	3.53	3.54
2026 Jan.	3.48	3.50	3.52	3.54	3.55	3.56	3.57	3.57	3.58	3.58
Feb.	3.34	3.36	3.38	3.39	3.41	3.42	3.43	3.43	3.44	3.44
Mar.	3.46	3.48	3.49	3.51	3.52	3.53	3.54	3.55	3.56	3.57
Apr.	3.58	3.60	3.61	3.63	3.64	3.65	3.67	3.68	3.69	3.70
May	3.48	3.50	3.52	3.54	3.56	3.57	3.58	3.60	3.61	3.62
June	3.38	3.41	3.42	3.44	3.46	3.47	3.49	3.50	3.51	3.52
July	3.63	3.65	3.67	3.69	3.70	3.71	3.73	3.74	3.75	3.76
2026 July 6	3.49	3.51	3.53	3.55	3.56	3.58	3.59	3.61	3.62	3.63
7	3.53	3.56	3.58	3.59	3.61	3.63	3.64	3.65	3.67	3.68
8	3.61	3.63	3.65	3.66	3.68	3.69	3.71	3.72	3.73	3.74
9	3.62	3.64	3.66	3.68	3.69	3.71	3.72	3.74	3.75	3.76
10	3.59	3.61	3.63	3.65	3.67	3.68	3.70	3.71	3.72	3.73
13	3.59	3.61	3.63	3.65	3.67	3.68	3.70	3.71	3.72	3.73
14	3.61	3.63	3.65	3.66	3.68	3.69	3.71	3.72	3.73	3.74
15	3.63	3.65	3.66	3.68	3.70	3.71	3.72	3.74	3.75	3.76
16	3.64	3.66	3.68	3.70	3.71	3.73	3.74	3.75	3.76	3.78
17	3.62	3.64	3.66	3.68	3.69	3.71	3.72	3.73	3.74	3.75
20	3.62	3.64	3.66	3.67	3.69	3.70	3.72	3.73	3.74	3.75
21	3.64	3.66	3.68	3.70	3.71	3.73	3.74	3.75	3.76	3.77
22	3.65	3.67	3.68	3.70	3.71	3.73	3.74	3.75	3.76	3.77
23	3.65	3.67	3.69	3.70	3.71	3.73	3.74	3.75	3.76	3.77
24	3.64	3.66	3.68	3.69	3.71	3.72	3.73	3.74	3.75	3.76
27	3.60	3.62	3.64	3.65	3.67	3.68	3.69	3.71	3.72	3.73
28	3.58	3.60	3.62	3.64	3.65	3.66	3.68	3.69	3.70	3.71
29	3.59	3.61	3.63	3.64	3.66	3.67	3.68	3.69	3.70	3.71
30	3.65	3.67	3.69	3.71	3.72	3.73	3.75	3.76	3.77	3.78
31	3.63	3.65	3.67	3.69	3.70	3.71	3.73	3.74	3.75	3.76
Aug. 3	3.63	3.65	3.67	3.69	3.70	3.71	3.73	3.74	3.75	3.76
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments										
2026 July 31	3.54	3.55	3.56	3.58	3.59	3.60	3.61	3.62	3.63	3.63
Parameters for calculating the term structure of interest rates										
	Beta0	Beta1	Beta2	Beta3	Tau1	Tau2				
2026 July 28	4.00081	– 1.77575	28.28719	– 29.74256	1.62780	1.74520				
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