

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
2013	0.13	0.24	0.44	0.69	0.95	1.21	1.47	1.70	1.92	2.11
2014	0.10	0.10	0.10	0.06	0.02	0.12	0.24	0.36	0.49	0.60
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
2023 Aug.	3.34	2.98	2.70	2.54	2.47	2.44	2.44	2.46	2.48	2.51
2023 Sep.	3.58	3.19	2.92	2.80	2.76	2.76	2.78	2.80	2.84	2.87
2023 Oct.	3.47	3.00	2.74	2.63	2.61	2.63	2.66	2.71	2.76	2.80
2023 Nov.	3.26	2.77	2.48	2.32	2.26	2.26	2.29	2.34	2.40	2.45
2023 Dec.	2.97	2.35	2.04	1.91	1.87	1.88	1.92	1.96	2.01	2.06
2024 Jan.	3.12	2.53	2.24	2.11	2.07	2.08	2.11	2.15	2.19	2.24
2024 Feb.	3.40	2.97	2.70	2.55	2.47	2.44	2.44	2.45	2.48	2.51
2024 Mar.	3.29	2.82	2.54	2.37	2.29	2.26	2.26	2.27	2.30	2.33
2024 Apr.	3.34	2.97	2.73	2.59	2.52	2.49	2.48	2.50	2.53	2.56
2024 May	3.36	3.07	2.88	2.76	2.69	2.65	2.65	2.66	2.68	2.71
2024 June	3.12	2.78	2.57	2.45	2.39	2.38	2.39	2.42	2.45	2.49
2024 July	2.95	2.54	2.32	2.22	2.19	2.20	2.22	2.26	2.30	2.35
2024 Aug.	2.71	2.32	2.15	2.09	2.09	2.12	2.16	2.20	2.25	2.30
2024 Sep.	2.44	2.05	1.92	1.90	1.93	1.98	2.04	2.10	2.16	2.21
2024 Oct.	2.46	2.24	2.17	2.17	2.21	2.25	2.31	2.36	2.41	2.46
2024 Nov.	2.23	1.95	1.88	1.88	1.91	1.96	2.01	2.06	2.11	2.15
2024 Dec.	2.17	2.02	2.02	2.06	2.13	2.20	2.27	2.33	2.38	2.43
2025 Jan.	2.20	2.10	2.09	2.13	2.19	2.26	2.33	2.40	2.46	2.51
2025 Jan. 6	2.28	2.13	2.11	2.14	2.20	2.27	2.33	2.39	2.44	2.49
2025 Jan. 7	2.27	2.11	2.09	2.13	2.20	2.27	2.33	2.40	2.45	2.50
2025 Jan. 8	2.28	2.13	2.11	2.16	2.22	2.29	2.36	2.42	2.48	2.53
2025 Jan. 9	2.30	2.16	2.15	2.20	2.26	2.33	2.40	2.47	2.53	2.58
2025 Jan. 10	2.33	2.19	2.19	2.23	2.30	2.37	2.44	2.50	2.56	2.61
2025 Jan. 13	2.38	2.25	2.25	2.29	2.36	2.43	2.49	2.55	2.61	2.66
2025 Jan. 14	2.35	2.23	2.24	2.29	2.36	2.43	2.49	2.55	2.61	2.66
2025 Jan. 15	2.36	2.24	2.25	2.31	2.37	2.44	2.50	2.56	2.62	2.66
2025 Jan. 16	2.34	2.21	2.21	2.25	2.31	2.38	2.44	2.50	2.55	2.60
2025 Jan. 17	2.31	2.17	2.17	2.21	2.27	2.33	2.40	2.46	2.51	2.56
2025 Jan. 20	2.32	2.19	2.18	2.22	2.28	2.34	2.40	2.47	2.52	2.57
2025 Jan. 21	2.31	2.18	2.17	2.20	2.26	2.32	2.38	2.44	2.49	2.54
2025 Jan. 22	2.30	2.17	2.16	2.19	2.25	2.31	2.37	2.43	2.49	2.54
2025 Jan. 23	2.32	2.20	2.19	2.23	2.28	2.34	2.41	2.47	2.52	2.57
2025 Jan. 24	2.35	2.24	2.23	2.27	2.32	2.38	2.44	2.50	2.56	2.61
2025 Jan. 27	2.33	2.21	2.19	2.22	2.27	2.33	2.39	2.45	2.51	2.55
2025 Jan. 28	2.34	2.23	2.22	2.25	2.30	2.36	2.42	2.48	2.53	2.58
2025 Jan. 29	2.32	2.21	2.19	2.22	2.28	2.34	2.40	2.46	2.52	2.57
2025 Jan. 30	2.30	2.19	2.18	2.21	2.27	2.33	2.39	2.45	2.51	2.56
2025 Jan. 31	2.20	2.10	2.09	2.13	2.19	2.26	2.33	2.40	2.46	2.51
2025 Feb. 3	2.13	2.01	2.01	2.05	2.12	2.19	2.26	2.33	2.38	2.44
2025 Feb. 4	2.16	2.04	2.04	2.08	2.14	2.21	2.28	2.34	2.40	2.46
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments										
2025 Jan. 31	2.20	2.10	2.09	2.13	2.19	2.26	2.32	2.38	2.44	2.49
Parameters for calculating the term structure of interest rates										
	Beta0	Beta1	Beta2	Beta3	Tau1	Tau2				
2025 Jan. 29	1.08998	1.52668	-0.02690	5.43294	1.18094	12.48553				
2025 Jan. 30	1.12018	1.48132	-0.03238	5.33234	1.14443	12.56575				
2025 Jan. 31	1.03397	1.47994	0.00372	5.55455	1.06622	12.64208				
2025 Feb. 3	1.08301	1.48375	-0.03273	5.14286	0.83183	12.41250				
2025 Feb. 4	1.06891	1.45794	0.00543	5.26397	0.91953	12.61624				

* 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
2013		2.28	2.42	2.55	2.66	2.75	2.82	2.87	2.92	2.95	2.97
2014		0.71	0.81	0.90	0.98	1.05	1.12	1.18	1.23	1.27	1.32
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	-	0.09	-	0.04	-	0.11	0.13	0.16
2020		-	0.53	-	0.50	-	0.46	-	0.43	-	0.40
2021		-	0.20	-	0.16	-	0.13	-	0.10	-	0.07
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
2023	Aug.	2.53	2.56	2.58	2.60	2.62	2.63	2.64	2.65	2.65	2.65
	Sep.	2.90	2.92	2.95	2.97	2.99	3.00	3.02	3.02	3.03	3.03
	Oct.	2.84	2.88	2.92	2.95	2.98	3.00	3.02	3.04	3.05	3.06
	Nov.	2.51	2.56	2.60	2.64	2.66	2.69	2.70	2.71	2.71	2.72
	Dec.	2.11	2.15	2.19	2.22	2.25	2.27	2.28	2.30	2.30	2.31
2024	Jan.	2.28	2.32	2.35	2.38	2.41	2.43	2.44	2.46	2.47	2.47
	Feb.	2.54	2.57	2.60	2.62	2.64	2.65	2.66	2.67	2.68	2.68
	Mar.	2.36	2.39	2.42	2.44	2.46	2.48	2.49	2.50	2.50	2.50
	Apr.	2.59	2.63	2.65	2.68	2.70	2.71	2.72	2.73	2.73	2.73
	May	2.74	2.77	2.80	2.83	2.85	2.87	2.88	2.89	2.89	2.89
	June	2.53	2.57	2.60	2.63	2.65	2.67	2.68	2.69	2.70	2.70
	July	2.39	2.42	2.46	2.49	2.51	2.54	2.55	2.57	2.58	2.58
	Aug.	2.34	2.38	2.41	2.44	2.46	2.49	2.50	2.52	2.53	2.53
	Sep.	2.26	2.31	2.35	2.38	2.42	2.44	2.47	2.48	2.50	2.51
	Oct.	2.50	2.54	2.57	2.60	2.62	2.64	2.65	2.66	2.67	2.67
	Nov.	2.19	2.22	2.25	2.28	2.30	2.31	2.33	2.34	2.35	2.35
	Dec.	2.48	2.52	2.55	2.58	2.60	2.62	2.63	2.64	2.65	2.65
2025	Jan.	2.56	2.60	2.64	2.67	2.70	2.72	2.73	2.75	2.76	2.76
2025	Jan. 6	2.54	2.57	2.60	2.63	2.65	2.67	2.68	2.69	2.69	2.70
	7	2.55	2.59	2.62	2.65	2.67	2.69	2.70	2.71	2.72	2.72
	8	2.58	2.62	2.65	2.68	2.70	2.72	2.73	2.74	2.75	2.75
	9	2.63	2.67	2.70	2.73	2.75	2.77	2.78	2.79	2.80	2.80
	10	2.66	2.69	2.73	2.76	2.78	2.80	2.81	2.82	2.82	2.83
	13	2.70	2.73	2.77	2.79	2.81	2.83	2.84	2.85	2.85	2.85
	14	2.70	2.74	2.77	2.79	2.81	2.83	2.84	2.85	2.86	2.86
	15	2.71	2.74	2.77	2.80	2.82	2.84	2.85	2.86	2.87	2.87
	16	2.64	2.68	2.71	2.74	2.76	2.78	2.80	2.81	2.81	2.82
	17	2.60	2.64	2.67	2.70	2.72	2.74	2.75	2.76	2.77	2.78
	20	2.61	2.65	2.68	2.71	2.73	2.75	2.77	2.78	2.79	2.79
	21	2.58	2.62	2.65	2.68	2.70	2.72	2.73	2.75	2.75	2.76
	22	2.58	2.62	2.65	2.68	2.70	2.72	2.74	2.75	2.76	2.76
	23	2.62	2.65	2.69	2.71	2.74	2.76	2.77	2.78	2.79	2.79
	24	2.65	2.69	2.72	2.75	2.77	2.79	2.80	2.81	2.82	2.82
	27	2.60	2.64	2.67	2.70	2.72	2.74	2.75	2.76	2.77	2.77
	28	2.63	2.66	2.70	2.72	2.75	2.76	2.78	2.79	2.80	2.80
	29	2.61	2.65	2.68	2.71	2.74	2.76	2.77	2.78	2.79	2.79
	30	2.60	2.64	2.68	2.70	2.73	2.75	2.76	2.77	2.78	2.79
	31	2.56	2.60	2.64	2.67	2.70	2.72	2.73	2.75	2.76	2.76
Feb.	3	2.48	2.52	2.56	2.59	2.61	2.63	2.65	2.66	2.67	2.67
	4	2.50	2.54	2.58	2.61	2.64	2.66	2.67	2.68	2.69	2.70
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments											
2025	Jan. 31	2.53	2.57	2.60	2.63	2.65	2.67	2.69	2.70	2.71	2.71
Parameters for calculating the term structure of interest rates											
		Beta0	Beta1	Beta2	Beta3	Tau1	Tau2				
2025	Jan. 29	1.08998	1.52668	-0.02690	5.43294	1.18094	12.48553				
	30	1.12018	1.48132	-0.03238	5.33234	1.14443	12.56575				
	31	1.03397	1.47994	0.00372	5.55455	1.06622	12.64208				
Feb.	3	1.08301	1.48375	-0.03273	5.14286	0.83183	12.41250				
	4	1.06891	1.45794	0.00543	5.26397	0.91953	12.61624				

* 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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% 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		
2014		1.36	1.39	1.43	1.46	1.48	1.51	1.53	1.55	1.57	1.59		
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	-	0.20	-	0.17	-	0.15	-	0.14
2021		0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	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	2.36	
2023		2.31	2.31	2.30	2.30	2.29	2.28	2.27	2.25	2.24	2.22	2.22	
2024		2.65	2.65	2.65	2.64	2.64	2.63	2.62	2.61	2.60	2.59	2.59	
2023	Aug.	2.65	2.65	2.64	2.63	2.62	2.61	2.60	2.59	2.57	2.56	2.56	
	Sep.	3.03	3.03	3.03	3.02	3.02	3.01	3.00	2.99	2.98	2.96	2.96	
	Oct.	3.07	3.07	3.07	3.07	3.06	3.06	3.05	3.04	3.03	3.02	3.02	
	Nov.	2.71	2.71	2.70	2.69	2.68	2.67	2.66	2.65	2.63	2.62	2.62	
	Dec.	2.31	2.31	2.30	2.30	2.29	2.28	2.27	2.25	2.24	2.22	2.22	
2024	Jan.	2.48	2.48	2.47	2.47	2.46	2.45	2.44	2.43	2.41	2.40	2.40	
	Feb.	2.67	2.67	2.66	2.65	2.64	2.63	2.62	2.60	2.59	2.57	2.57	
	Mar.	2.50	2.50	2.49	2.49	2.48	2.47	2.45	2.44	2.43	2.41	2.41	
	Apr.	2.73	2.72	2.71	2.70	2.69	2.68	2.66	2.65	2.63	2.62	2.62	
	May	2.89	2.89	2.88	2.86	2.85	2.83	2.82	2.80	2.78	2.76	2.76	
	June	2.70	2.69	2.68	2.67	2.66	2.65	2.64	2.62	2.61	2.59	2.59	
	July	2.59	2.59	2.59	2.58	2.58	2.57	2.56	2.55	2.53	2.52	2.52	
	Aug.	2.54	2.54	2.54	2.54	2.53	2.53	2.52	2.51	2.50	2.49	2.49	
	Sep.	2.52	2.52	2.53	2.53	2.52	2.52	2.51	2.51	2.50	2.49	2.49	
	Oct.	2.68	2.67	2.67	2.67	2.66	2.65	2.64	2.63	2.62	2.60	2.60	
	Nov.	2.35	2.35	2.35	2.35	2.34	2.33	2.32	2.32	2.30	2.29	2.29	
	Dec.	2.65	2.65	2.65	2.64	2.64	2.63	2.62	2.61	2.60	2.59	2.59	
2025	Jan.	2.76	2.76	2.76	2.76	2.75	2.74	2.73	2.72	2.71	2.69	2.69	
2025	Jan. 6	2.70	2.69	2.69	2.68	2.67	2.66	2.65	2.64	2.63	2.61	2.61	
	7	2.72	2.72	2.72	2.71	2.70	2.69	2.68	2.67	2.66	2.64	2.64	
	8	2.75	2.75	2.75	2.74	2.73	2.72	2.71	2.70	2.69	2.67	2.67	
	9	2.80	2.80	2.80	2.79	2.78	2.77	2.76	2.75	2.74	2.72	2.72	
	10	2.83	2.83	2.82	2.81	2.81	2.80	2.78	2.77	2.76	2.74	2.74	
	13	2.85	2.85	2.85	2.84	2.83	2.82	2.81	2.80	2.78	2.77	2.77	
	14	2.86	2.86	2.86	2.85	2.85	2.84	2.83	2.82	2.80	2.79	2.79	
	15	2.88	2.88	2.87	2.87	2.86	2.86	2.85	2.84	2.83	2.82	2.82	
	16	2.82	2.82	2.82	2.82	2.81	2.80	2.79	2.79	2.77	2.76	2.76	
	17	2.78	2.78	2.78	2.78	2.77	2.76	2.75	2.75	2.74	2.72	2.72	
	20	2.79	2.79	2.79	2.79	2.78	2.78	2.77	2.76	2.75	2.74	2.74	
	21	2.76	2.76	2.76	2.75	2.75	2.74	2.73	2.72	2.71	2.69	2.69	
	22	2.76	2.76	2.76	2.75	2.75	2.74	2.73	2.72	2.70	2.69	2.69	
	23	2.79	2.79	2.79	2.78	2.78	2.77	2.76	2.75	2.74	2.72	2.72	
	24	2.82	2.82	2.82	2.81	2.81	2.80	2.78	2.77	2.76	2.75	2.75	
	27	2.77	2.77	2.77	2.76	2.76	2.75	2.74	2.72	2.71	2.70	2.70	
	28	2.80	2.80	2.79	2.79	2.78	2.77	2.76	2.75	2.73	2.72	2.72	
	29	2.79	2.79	2.79	2.78	2.77	2.77	2.75	2.74	2.73	2.71	2.71	
	30	2.79	2.79	2.78	2.78	2.77	2.76	2.75	2.74	2.73	2.71	2.71	
	31	2.76	2.76	2.76	2.76	2.75	2.74	2.73	2.72	2.71	2.69	2.69	
Feb.	3	2.67	2.67	2.67	2.67	2.66	2.65	2.64	2.63	2.62	2.60	2.60	
	4	2.70	2.70	2.70	2.69	2.69	2.68	2.67	2.66	2.65	2.63	2.63	
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments													
2025	Jan. 31	2.72	2.72	2.72	2.72	2.71	2.71	2.70	2.69	2.69	2.68	2.68	
Parameters for calculating the term structure of interest rates													
		Beta0	Beta1	Beta2	Beta3	Tau1	Tau2						
2025	Jan. 29	1.08998	1.52668	-0.02690	5.43294	1.18094	12.48553						
	30	1.12018	1.48132	-0.03238	5.33234	1.14443	12.56575						
	31	1.03397	1.47994	0.00372	5.55455	1.06622	12.64208						
Feb.	3	1.08301	1.48375	-0.03273	5.14286	0.83183	12.41250						
	4	1.06891	1.45794	0.00543	5.26397	0.91953	12.61624						

* 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.