

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

End of year or month or trading day		Interest rate at a residual maturity of ... years																			
		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
2024	Oct.		2.46		2.24		2.17		2.17		2.21		2.25		2.31		2.36		2.41		2.46
	Nov.		2.23		1.95		1.88		1.88		1.91		1.96		2.01		2.06		2.11		2.15
	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
	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
2026	Mar.	3	2.11		2.16		2.23		2.32		2.41		2.50		2.59		2.69		2.77		2.86
		4	2.10		2.15		2.21		2.29		2.38		2.47		2.56		2.65		2.74		2.82
		5	2.11		2.16		2.23		2.31		2.40		2.49		2.59		2.68		2.77		2.85
		6	2.17		2.24		2.32		2.40		2.49		2.58		2.66		2.75		2.83		2.91
		9	2.26		2.34		2.41		2.49		2.57		2.65		2.73		2.81		2.88		2.95
		10	2.15		2.22		2.30		2.39		2.48		2.57		2.66		2.74		2.83		2.91
		11	2.22		2.29		2.37		2.46		2.54		2.63		2.71		2.80		2.88		2.96
		12	2.26		2.33		2.41		2.50		2.59		2.67		2.76		2.84		2.92		3.00
		13	2.27		2.35		2.43		2.51		2.60		2.69		2.77		2.86		2.94		3.01
		16	2.27		2.35		2.43		2.52		2.61		2.70		2.78		2.87		2.95		3.02
		17	2.26		2.33		2.41		2.49		2.58		2.66		2.75		2.83		2.91		2.99
		18	2.26		2.32		2.39		2.47		2.55		2.63		2.71		2.79		2.87		2.95
		19	2.38		2.50		2.53		2.57		2.64		2.72		2.80		2.89		2.97		3.05
		20	2.54		2.61		2.62		2.65		2.70		2.77		2.85		2.92		2.99		3.06
		23	2.64		2.72		2.72		2.75		2.80		2.86		2.93		3.00		3.07		3.13
		24	2.53		2.59		2.61		2.65		2.71		2.79		2.87		2.94		3.02		3.08
		25	2.50		2.61		2.62		2.63		2.68		2.75		2.83		2.90		2.98		3.04
		26	2.53		2.65		2.66		2.69		2.74		2.80		2.88		2.95		3.03		3.09
		27	2.59		2.73		2.75		2.77		2.83		2.90		2.98		3.05		3.12		3.18
		30	2.54		2.67		2.68		2.71		2.77		2.85		2.93		3.02		3.09		3.16
		31	2.51		2.62		2.62		2.65		2.72		2.79		2.88		2.96		3.03		3.10
Apr.	1		2.47		2.56		2.57		2.60		2.65		2.73		2.81		2.89		2.96		3.03
	2		2.52		2.63		2.64		2.66		2.72		2.79		2.88		2.96		3.03		3.10
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments																					
2026	Mar.	31	2.51		2.61		2.62		2.65		2.71		2.78		2.86		2.93		3.00		3.06
Parameters for calculating the term structure of interest rates																					
			Beta0			Beta1			Beta2			Beta3			Tau1			Tau2			
2026	Mar.	27	3.85378			– 2.00117			13.16918			– 13.94977			1.25383			1.49486			
		30	3.87087			– 2.03920			13.00632			– 14.01593			1.24635			1.49518			
		31	3.81170			– 1.97459			3.98374			– 5.44403			1.02463			1.72724			
Apr.	1		3.75728			– 1.82053			14.32721			– 15.60838			1.34438			1.55857			
	2		3.84029			– 1.93197			15.25691			– 16.42973			1.31301			1.52560			

* 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	0.11	0.13	0.16
2020		-	0.53	-	0.46	-	0.40	-	0.37	-	0.30
2021		-	0.20	-	0.13	-	0.07	-	0.05	-	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
2024 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
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
2026 Mar.	3	2.94	3.01	3.08	3.14	3.20	3.25	3.30	3.33	3.37	3.40
	4	2.90	2.97	3.04	3.11	3.16	3.22	3.26	3.30	3.34	3.37
	5	2.93	3.01	3.08	3.14	3.20	3.25	3.29	3.33	3.37	3.40
	6	2.98	3.05	3.12	3.17	3.23	3.27	3.31	3.35	3.38	3.41
	9	3.01	3.07	3.13	3.18	3.23	3.28	3.31	3.35	3.38	3.41
	10	2.99	3.06	3.12	3.18	3.24	3.29	3.33	3.37	3.40	3.43
	11	3.03	3.10	3.16	3.22	3.27	3.32	3.36	3.40	3.43	3.46
	12	3.07	3.14	3.20	3.25	3.31	3.35	3.39	3.43	3.46	3.49
	13	3.09	3.15	3.22	3.27	3.33	3.37	3.41	3.45	3.48	3.51
	16	3.09	3.16	3.22	3.28	3.33	3.38	3.42	3.45	3.49	3.51
	17	3.06	3.12	3.19	3.24	3.30	3.34	3.39	3.42	3.45	3.48
	18	3.02	3.08	3.14	3.20	3.25	3.30	3.34	3.38	3.41	3.43
	19	3.11	3.17	3.22	3.27	3.31	3.34	3.38	3.40	3.43	3.45
	20	3.12	3.17	3.22	3.26	3.30	3.33	3.36	3.39	3.42	3.44
	23	3.18	3.23	3.28	3.32	3.35	3.39	3.41	3.44	3.46	3.48
	24	3.14	3.19	3.24	3.28	3.32	3.35	3.38	3.41	3.43	3.45
	25	3.10	3.16	3.20	3.24	3.28	3.31	3.34	3.36	3.39	3.41
	26	3.15	3.20	3.24	3.28	3.31	3.34	3.37	3.39	3.42	3.44
	27	3.24	3.29	3.33	3.37	3.40	3.43	3.45	3.47	3.49	3.51
	30	3.22	3.27	3.31	3.35	3.39	3.42	3.44	3.47	3.49	3.51
	31	3.16	3.21	3.25	3.29	3.32	3.35	3.38	3.40	3.43	3.45
Apr.	1	3.09	3.14	3.18	3.22	3.26	3.29	3.32	3.34	3.36	3.38
	2	3.16	3.22	3.26	3.30	3.34	3.37	3.40	3.42	3.44	3.46
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments											
2026 Mar.	31	3.11	3.16	3.20	3.23	3.26	3.29	3.31	3.33	3.35	3.36
Parameters for calculating the term structure of interest rates											
		Beta0	Beta1	Beta2	Beta3	Tau1	Tau2				
2026 Mar.	27	3.85378	-2.00117	13.16918	-13.94977	1.25383	1.49486				
	30	3.87087	-2.03920	13.00632	-14.01593	1.24635	1.49518				
	31	3.81170	-1.97459	3.98374	-5.44403	1.02463	1.72724				
Apr.	1	3.75728	-1.82053	14.32721	-15.60838	1.34438	1.55857				
	2	3.84029	-1.93197	15.25691	-16.42973	1.31301	1.52560				

* 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
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
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
2024	Oct.	2.68	2.67	2.67	2.67	2.66	2.65	2.64	2.63	2.62	2.60
	Nov.	2.35	2.35	2.35	2.35	2.34	2.33	2.32	2.32	2.30	2.29
	Dec.	2.65	2.65	2.65	2.64	2.64	2.63	2.62	2.61	2.60	2.59
2025	Jan.	2.76	2.76	2.76	2.76	2.75	2.74	2.73	2.72	2.71	2.69
	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	3.33	3.35	3.35	3.36	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
2026	Mar.	3	3.42	3.44	3.45	3.47	3.47	3.48	3.48	3.48	3.47
		4	3.40	3.42	3.44	3.45	3.46	3.47	3.47	3.47	3.47
		5	3.42	3.44	3.46	3.47	3.48	3.48	3.49	3.48	3.48
		6	3.43	3.45	3.46	3.47	3.47	3.48	3.47	3.47	3.46
		9	3.43	3.45	3.46	3.47	3.48	3.49	3.48	3.48	3.47
		10	3.45	3.46	3.48	3.49	3.49	3.49	3.48	3.48	3.46
		11	3.48	3.50	3.51	3.52	3.53	3.53	3.52	3.51	3.50
		12	3.51	3.53	3.54	3.55	3.55	3.56	3.55	3.54	3.53
		13	3.53	3.55	3.56	3.57	3.58	3.58	3.57	3.56	3.55
		16	3.53	3.55	3.57	3.57	3.58	3.58	3.58	3.57	3.56
		17	3.50	3.52	3.54	3.55	3.55	3.56	3.55	3.54	3.53
		18	3.45	3.47	3.48	3.49	3.50	3.50	3.49	3.48	3.47
		19	3.47	3.49	3.51	3.52	3.54	3.55	3.57	3.58	3.60
		20	3.46	3.48	3.50	3.51	3.53	3.54	3.55	3.56	3.59
		23	3.50	3.52	3.54	3.55	3.57	3.58	3.59	3.60	3.62
		24	3.47	3.49	3.51	3.52	3.54	3.55	3.56	3.57	3.59
		25	3.43	3.44	3.46	3.47	3.48	3.50	3.51	3.52	3.54
		26	3.45	3.47	3.48	3.50	3.51	3.52	3.53	3.54	3.56
		27	3.53	3.54	3.56	3.57	3.58	3.59	3.60	3.61	3.63
		30	3.52	3.54	3.55	3.57	3.58	3.59	3.60	3.61	3.63
		31	3.46	3.48	3.49	3.51	3.52	3.53	3.54	3.55	3.57
	Apr.	1	3.40	3.42	3.43	3.44	3.46	3.47	3.48	3.49	3.51
		2	3.48	3.50	3.51	3.53	3.54	3.55	3.56	3.57	3.59
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments											
2026	Mar.	31	3.38	3.39	3.40	3.41	3.42	3.43	3.44	3.45	3.46
Parameters for calculating the term structure of interest rates											
		Beta0	Beta1	Beta2	Beta3	Tau1	Tau2				
2026	Mar.	27	3.85378	-2.00117	13.16918	-13.94977	1.25383	1.49486			
		30	3.87087	-2.03920	13.00632	-14.01593	1.24635	1.49518			
		31	3.81170	-1.97459	3.98374	-5.44403	1.02463	1.72724			
	Apr.	1	3.75728	-1.82053	14.32721	-15.60838	1.34438	1.55857			
		2	3.84029	-1.93197	15.25691	-16.42973	1.31301	1.52560			

* 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.