

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 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 Feb.		2.07	1.97	1.97	2.02	2.08	2.15	2.23	2.30	2.36	2.42
2025 Mar.		2.01	1.97	2.03	2.13	2.25	2.37	2.48	2.58	2.67	2.75
2025 Apr.		1.75	1.70	1.78	1.89	2.01	2.13	2.24	2.35	2.44	2.52
2025 Apr. 2		2.03	2.00	2.05	2.15	2.26	2.38	2.48	2.58	2.67	2.74
2025 Apr. 3		1.97	1.93	1.99	2.10	2.22	2.34	2.45	2.55	2.64	2.72
2025 Apr. 4		1.93	1.85	1.90	2.00	2.11	2.22	2.33	2.43	2.51	2.59
2025 Apr. 7		1.79	1.67	1.71	1.83	1.96	2.10	2.22	2.33	2.43	2.51
2025 Apr. 8		1.92	1.85	1.91	2.01	2.14	2.27	2.40	2.51	2.60	2.68
2025 Apr. 9		1.83	1.75	1.81	1.93	2.07	2.21	2.35	2.47	2.58	2.67
2025 Apr. 10		1.88	1.83	1.92	2.04	2.17	2.30	2.42	2.53	2.62	2.70
2025 Apr. 11		1.79	1.73	1.81	1.94	2.08	2.21	2.33	2.43	2.53	2.61
2025 Apr. 14		1.81	1.77	1.84	1.96	2.09	2.22	2.33	2.44	2.53	2.60
2025 Apr. 15		1.81	1.75	1.82	1.93	2.05	2.17	2.28	2.38	2.47	2.55
2025 Apr. 16		1.78	1.72	1.80	1.91	2.04	2.16	2.28	2.38	2.47	2.55
2025 Apr. 17		1.83	1.79	1.86	1.96	2.08	2.20	2.31	2.41	2.50	2.58
2025 Apr. 22		1.72	1.65	1.73	1.85	1.98	2.10	2.22	2.33	2.42	2.51
2025 Apr. 23		1.77	1.72	1.78	1.89	2.01	2.13	2.25	2.35	2.44	2.52
2025 Apr. 24		1.75	1.69	1.76	1.87	2.00	2.12	2.23	2.34	2.43	2.51
2025 Apr. 25		1.75	1.71	1.78	1.89	2.01	2.13	2.25	2.35	2.44	2.53
2025 Apr. 28		1.76	1.72	1.80	1.92	2.04	2.16	2.27	2.38	2.47	2.56
2025 Apr. 29		1.75	1.70	1.78	1.90	2.02	2.15	2.26	2.37	2.46	2.55
2025 Apr. 30		1.75	1.70	1.78	1.89	2.01	2.13	2.24	2.35	2.44	2.52
2025 May 2		1.76	1.71	1.78	1.89	2.01	2.12	2.24	2.34	2.43	2.52
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments											
2025 Apr. 30		1.75	1.70	1.77	1.88	2.00	2.12	2.22	2.32	2.41	2.48
Parameters for calculating the term structure of interest rates											
	Beta0	Beta1	Beta2	Beta3	Tau1	Tau2					
2025 Apr. 28	0.76341	1.34923	0.00579	7.24460	0.72222	13.04251					
2025 Apr. 29	0.71518	1.41887	0.02183	7.36324	0.69697	12.90807					
2025 Apr. 30	0.70176	1.40122	0.03826	7.29727	0.73800	12.93449					
2025 May 2	0.67951	1.43427	0.00505	7.37619	0.78308	13.02978					

* 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.

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

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	-	0.04	-	0.00	0.07	0.11	0.13	0.16	
2020		-	0.53	-	0.46	-	0.40	-	0.35	-	0.30	
2021		-	0.20	-	0.13	-	0.10	-	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	
2023	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	
	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	
2025	Apr. 2	2.81	2.86	2.91	2.94	2.97	3.00	3.01	3.03	3.04	3.05	
	3	2.78	2.84	2.89	2.93	2.96	2.99	3.01	3.02	3.04	3.05	
	4	2.66	2.71	2.76	2.80	2.84	2.87	2.89	2.91	2.92	2.93	
	7	2.59	2.65	2.70	2.74	2.77	2.80	2.83	2.84	2.86	2.87	
	8	2.75	2.81	2.86	2.90	2.93	2.96	2.98	2.99	3.01	3.02	
	9	2.75	2.81	2.86	2.91	2.94	2.97	2.99	3.01	3.02	3.03	
	10	2.77	2.83	2.88	2.92	2.95	2.98	3.00	3.02	3.04	3.04	
	11	2.68	2.74	2.79	2.83	2.87	2.90	2.92	2.94	2.95	2.96	
	14	2.67	2.73	2.77	2.81	2.85	2.87	2.89	2.91	2.92	2.93	
	15	2.62	2.69	2.74	2.78	2.82	2.85	2.88	2.90	2.91	2.92	
	16	2.62	2.68	2.74	2.78	2.82	2.85	2.87	2.89	2.91	2.92	
	17	2.65	2.71	2.76	2.81	2.85	2.88	2.90	2.92	2.94	2.95	
	22	2.58	2.65	2.70	2.75	2.79	2.83	2.85	2.87	2.89	2.90	
	23	2.60	2.66	2.72	2.76	2.80	2.83	2.86	2.88	2.90	2.91	
	24	2.59	2.65	2.71	2.76	2.80	2.83	2.86	2.88	2.90	2.91	
	25	2.60	2.66	2.72	2.77	2.81	2.84	2.87	2.89	2.91	2.92	
	28	2.63	2.69	2.75	2.80	2.84	2.87	2.90	2.92	2.94	2.95	
	29	2.62	2.69	2.74	2.79	2.83	2.87	2.89	2.92	2.93	2.95	
	30	2.60	2.66	2.72	2.76	2.80	2.84	2.86	2.89	2.90	2.91	
	May 2	2.59	2.66	2.71	2.76	2.80	2.84	2.87	2.89	2.90	2.92	
Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments												
2025	Apr. 30	2.55	2.61	2.66	2.70	2.73	2.76	2.79	2.81	2.82	2.83	
Parameters for calculating the term structure of interest rates												
		Beta0		Beta1		Beta2		Beta3		Tau1		Tau2
2025	Apr. 28	0.76341		1.34923		0.00579		7.24460		0.72222		13.04251
	29	0.71518		1.41887		0.02183		7.36324		0.69697		12.90807
	30	0.70176		1.40122		0.03826		7.29727		0.73800		12.93449
	May 2	0.67951		1.43427		0.00505		7.37619		0.78308		13.02978

* 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

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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	-	0.25	-	0.21	-	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	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	
	Feb.	2.69	2.69	2.69	2.69	2.68	2.67	2.66	2.65	2.64	2.62	2.62	
	Mar.	3.08	3.08	3.08	3.08	3.08	3.07	3.07	3.06	3.05	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	2.86	
2025	Apr. 2	3.05	3.05	3.05	3.05	3.05	3.04	3.04	3.03	3.02	3.02	3.02	
	3	3.05	3.06	3.06	3.06	3.06	3.06	3.05	3.05	3.04	3.03	3.03	
	4	2.94	2.94	2.94	2.93	2.93	2.92	2.91	2.90	2.88	2.87	2.87	
	7	2.87	2.88	2.88	2.88	2.87	2.87	2.86	2.85	2.85	2.84	2.84	
	8	3.02	3.03	3.03	3.03	3.03	3.03	3.03	3.02	3.02	3.01	3.01	
	9	3.04	3.04	3.04	3.04	3.04	3.04	3.04	3.03	3.03	3.02	3.02	
	10	3.05	3.05	3.05	3.05	3.04	3.03	3.03	3.01	3.00	2.99	2.99	
	11	2.96	2.96	2.96	2.96	2.95	2.94	2.93	2.92	2.90	2.89	2.89	
	14	2.93	2.93	2.93	2.92	2.92	2.91	2.90	2.89	2.87	2.86	2.86	
	15	2.93	2.93	2.93	2.92	2.91	2.90	2.89	2.88	2.87	2.85	2.85	
	16	2.92	2.92	2.92	2.92	2.91	2.90	2.89	2.88	2.87	2.85	2.85	
	17	2.95	2.96	2.96	2.95	2.95	2.94	2.93	2.92	2.91	2.89	2.89	
	22	2.91	2.91	2.91	2.91	2.90	2.89	2.88	2.87	2.86	2.84	2.84	
	23	2.91	2.92	2.92	2.91	2.91	2.90	2.89	2.87	2.86	2.84	2.84	
	24	2.92	2.92	2.92	2.92	2.92	2.91	2.90	2.89	2.87	2.86	2.86	
	25	2.93	2.93	2.93	2.93	2.92	2.91	2.90	2.89	2.88	2.86	2.86	
	28	2.96	2.97	2.97	2.97	2.96	2.95	2.94	2.93	2.92	2.90	2.90	
	29	2.95	2.96	2.96	2.95	2.95	2.94	2.93	2.92	2.90	2.89	2.89	
	30	2.92	2.93	2.93	2.92	2.92	2.91	2.90	2.89	2.87	2.86	2.86	
	May 2	2.93	2.93	2.93	2.93	2.92	2.91	2.90	2.89	2.88	2.86	2.86	
		Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments											
2025	Apr. 30	2.84	2.85	2.85	2.85	2.85	2.84	2.84	2.83	2.83	2.82	2.82	
		Parameters for calculating the term structure of interest rates											
		Beta0	Beta1	Beta2	Beta3	Tau1	Tau2						
2025	Apr. 28	0.76341	1.34923	0.00579	7.24460	0.72222	13.04251						
	29	0.71518	1.41887	0.02183	7.36324	0.69697	12.90807						
	30	0.70176	1.40122	0.03826	7.29727	0.73800	12.93449						
	May 2	0.67951	1.43427	0.00505	7.37619	0.78308	13.02978						

* 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.