



Capital market indicators

April 2020

Statistical Series

Deutsche Bundesbank
Wilhelm-Epstein-Strasse 14
60431 Frankfurt am Main
Germany

Postfach 10 06 02
60006 Frankfurt am Main
Germany

Tel.: +49 (0)69 9566 3512
Email: www.bundesbank.de/contact

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Changes of definitions

Up to the end of 1999, debt securities comprise bonds, and money market paper issued by domestic banks; from January 2000, all debt securities with the exception of commercial paper issued by Corporates (Non-MFIs).

NB

Percentages are computed from figures reported in € thousand.

Abbreviations and symbols

p	Provisional
r	Revised
s	Estimated
.	Data unknown, not to be published or not meaningful
0	Less than 0.5 but more than nil
–	Nil

Discrepancies in the totals are due to rounding.

I. Indices

Indices for securities issued by residents

Debt securities issued by residents ¹			Indices on debt securities issued by residents ^{2 3}							
Issue Yields	Yields	Shares				Debt securities				
		Share price index		Performance Index		Share price index		Performance Index		
		CDAX share price index	DAX share price index	Composite DAX (CDAX)	German share index (DAX)	German bond index (REX)	iBoxx-€ Germany price index	REX-Performance index (REXP)	iBoxx-€ Germany Performance-index	
Period	% per annum	End-1987=100	End-1987=1,000	End-1987=100	End-1987=1,000	Average daily rate	End-1998=100	End-1987=100	End-1998=100	
2003	3.8	3.7	252.48	2,857.84	344.89	3,965.16	117.36	97.09	284.72	125.21
2004	3.9	3.7	268.32	3,004.65	374.09	4,256.08	120.19	99.89	303.80	134.40
2005	3.3	3.1	335.59	3,719.79	479.59	5,408.26	120.92	101.09	316.20	141.50
2006	3.8	3.8	407.16	4,429.01	595.11	6,596.92	116.78	96.69	317.05	140.98
2007	4.3	4.3	478.65	5,277.23	716.65	8,067.32	114.85	94.62	325.02	143.83
2008	4.3	4.2	266.33	3,041.60	411.51	4,810.20	121.68	102.06	357.99	161.42
2009	3.5	3.2	320.32	3,604.02	516.05	5,957.43	123.62	100.12	375.62	164.54
2010	2.6	2.5	368.72	4,053.71	611.30	6,914.19	124.96	102.95	390.67	174.97
2011	2.7	2.6	304.60	3,346.06	520.73	5,898.35	131.48	109.53	423.06	191.98
2012	1.6	1.4	380.03	4,161.30	673.11	7,612.39	135.11	111.18	442.69	200.27
2013	1.6	1.4	466.53	5,051.89	853.14	9,552.16	132.11	105.92	440.54	195.87
2014	1.2	1.0	468.39	5,044.71	879.54	9,805.55	139.68	114.37	471.82	216.25
2015	0.7	0.5	508.80	5,390.31	979.19	10,743.01	139.52	112.42	474.24	216.98
2016	0.4	0.1	526.55	5,588.27	1,042.86	11,481.06	142.50	112.72	485.31	225.72
2017	0.6	0.3	595.45	6,122.26	1,209.51	12,917.64	140.53	109.03	480.68	222.42
2018	0.7	0.4	474.85	4,862.74	990.45	10,558.96	141.84	109.71	487.68	227.73
2019	0.2	-	575.80	5,909.66	1,238.89	13,249.01	143.72	111.32	493.22	234.59
2016 Sep.	0.6	-	490.14	5,116.12	970.75	10,511.02	144.47	115.53	491.66	231.26
Oct.	0.2	0.0	494.25	5,191.07	978.89	10,665.01	142.59	113.12	485.28	226.52
Nov.	0.3	0.2	490.37	5,179.04	971.21	10,640.30	142.37	112.33	484.67	224.92
Dec.	0.6	0.2	526.55	5,588.27	1,042.86	11,481.06	142.50	112.72	485.31	225.72
2017 Jan.	0.5	0.2	530.99	5,614.30	1,051.73	11,535.31	141.33	110.45	481.45	222.67
Feb.	0.5	0.2	543.02	5,740.60	1,078.64	11,834.41	143.32	112.08	488.38	226.19
Mar.	0.4	0.3	562.80	5,953.44	1,120.80	12,312.87	141.93	110.93	483.82	223.87
Apr.	0.3	0.2	570.29	6,004.37	1,137.78	12,438.01	141.87	111.03	483.78	224.08
May	0.5	0.3	572.60	5,990.58	1,159.99	12,615.06	141.95	110.90	484.21	223.94
June	0.5	0.2	557.50	5,841.44	1,132.19	12,325.12	140.79	109.60	480.42	221.32
July	0.5	0.4	552.08	5,743.40	1,121.34	12,118.25	140.78	108.71	480.60	221.21
Aug.	0.6	0.3	551.25	5,713.82	1,119.70	12,055.84	141.85	110.01	484.46	224.15
Sep.	0.7	0.3	585.63	6,080.19	1,189.55	12,828.86	141.21	109.06	482.44	222.43
Oct.	0.5	0.3	603.37	6,270.10	1,225.58	13,229.57	141.63	109.70	484.08	223.78
Nov.	0.5	0.3	597.74	6,172.66	1,214.16	13,023.98	141.23	109.62	482.90	223.63
Dec.	1.2	0.3	595.45	6,122.26	1,209.51	12,917.64	140.53	109.03	480.68	222.42
2018 Jan.	0.8	0.5	608.72	6,250.68	1,236.54	13,189.48	139.19	107.24	476.34	220.12
Feb.	1.0	0.6	577.02	5,875.60	1,175.06	12,435.85	139.24	107.33	476.80	220.54
Mar.	0.6	0.5	561.97	5,715.45	1,144.50	12,096.73	140.36	108.53	480.92	223.00
Apr.	0.6	0.5	579.61	5,916.24	1,187.85	12,612.11	139.85	108.02	479.42	221.98
May	0.7	0.5	572.08	5,804.98	1,192.30	12,604.89	141.11	109.76	483.98	225.67
June	0.5	0.4	557.27	5,668.60	1,162.24	12,306.00	141.29	109.87	484.77	225.89
July	0.8	0.3	580.49	5,898.69	1,210.78	12,805.50	140.83	108.50	483.35	224.63
Aug.	0.6	0.3	567.19	5,695.34	1,183.07	12,364.06	141.24	109.06	484.93	226.15
Sep.	0.6	0.4	556.11	5,641.29	1,159.95	12,246.73	140.34	108.01	482.02	224.18
Oct.	0.8	0.5	519.54	5,273.14	1,083.66	11,447.51	141.11	108.69	484.87	225.61
Nov.	0.5	0.4	509.46	5,185.50	1,062.63	11,257.24	141.47	109.14	486.30	226.55
Dec.	1.0	0.3	474.85	4,862.74	990.45	10,558.96	141.84	109.71	487.68	227.73
2019 Jan.	0.6	0.3	505.55	5,128.61	1,057.30	11,173.10	142.15	110.01	488.86	229.54
Feb.	0.4	0.2	517.62	5,284.27	1,083.17	11,515.64	142.06	109.52	488.60	228.75
Mar.	0.3	0.2	516.84	5,274.00	1,083.74	11,526.04	143.19	111.35	492.53	232.58
Apr.	0.4	0.1	552.28	5,626.34	1,162.42	12,344.08	142.69	110.72	490.85	231.26
May	0.3	0.1	510.79	5,235.06	1,097.08	11,726.84	144.20	112.36	496.03	234.80
June	0.4	-	535.23	5,535.26	1,151.35	12,398.80	144.73	113.54	497.76	237.27
July	-	0.1	528.16	5,441.61	1,136.26	12,189.04	145.43	113.94	500.03	239.49
Aug.	-	0.1	518.10	5,327.67	1,114.63	11,939.28	147.13	116.35	505.60	244.97
Sep.	0.0	-	535.82	5,545.79	1,152.86	12,428.08	145.93	114.98	501.23	242.30
Oct.	-	0.1	554.98	5,741.56	1,194.09	12,866.79	144.91	113.34	497.53	238.84
Nov.	0.2	-	571.40	5,906.48	1,229.42	13,236.38	144.67	112.86	496.58	237.84
Dec.	0.5	-	575.80	5,909.66	1,238.89	13,249.01	143.72	111.32	493.22	234.59
2020 Jan.	0.2	-	565.28	5,790.54	1,216.25	12,981.97	144.88	113.14	497.10	239.46
Feb.	0.1	-	516.08	5,287.76	1,113.36	11,890.35	146.02	114.54	500.85	242.68
Mar.	-	-	429.84	4,416.97	927.23	9,935.84	145.13	113.12	497.56	239.67

¹ Average of year or month; see explanatory notes for further details. ² End of year or month. ³ Source: Deutsche Börse AG; see explanatory notes for further details.

II. Yields

1. Issue yields, by category of securities

% per annum

Period	Bank debt securities							Corporate bonds (non-MFIs)	Public debt securities	
	Total	Total	Mortgage Pfandbriefe	Public Pfandbriefe	Debt securities issued by special purpose credit institutions	Other bank debt securities	Total		of which: Listed Federal debt securities	
2003	3.8	3.8	3.8	3.7	3.9	3.8	4.6	3.8	3.8	
2004	3.9	3.7	3.7	3.6	3.7	3.8	5.7	3.8	3.8	
2005	3.3	3.2	3.2	3.1	3.3	3.1	6.3	3.2	3.2	
2006	3.8	3.8	3.8	3.8	4.0	3.8	3.3	3.8	3.8	
2007	4.3	4.5	4.4	4.4	4.5	4.5	7.6	4.3	4.2	
2008	4.3	4.5	4.5	4.4	4.4	4.7	8.0	4.0	3.9	
2009	3.5	3.5	3.5	3.4	3.1	3.8	5.9	3.1	3.0	
2010	2.6	2.7	2.6	2.6	2.4	3.0	.	2.4	2.4	
2011	2.7	3.0	3.0	3.1	2.8	3.1	6.6	2.5	2.3	
2012	1.6	1.8	1.7	1.8	1.5	2.3	5.5	1.3	1.2	
2013	1.6	1.8	1.5	1.6	1.2	2.3	4.8	1.3	1.2	
2014	1.2	1.3	1.1	1.3	0.9	1.8	5.5	1.1	0.9	
2015	0.7	0.7	0.5	0.6	0.4	1.3	5.1	0.4	0.4	
2016 ¹	0.4	0.6	0.3	0.4	0.4	1.2	3.8	0.1	0.1	
2017 ¹	0.6	0.6	0.5	0.5	0.5	1.2	3.7	0.4	0.2	
2018	0.7	0.6	0.5	0.5	0.5	1.1	3.8	0.6	0.4	
2019	0.2	0.4	0.3	0.4	0.3	0.8	3.3	-	0.3	
2016 Sep.	0.6	0.7	0.2	0.3	0.4	1.1	3.3	0.0	0.2	
Oct.	0.2	0.4	0.5	0.3	0.3	0.8	2.7	0.0	0.1	
Nov.	0.3	0.5	0.2	0.8	0.5	0.8	4.8	0.3	0.1	
Dec.	0.6	0.9	0.4	0.2	0.6	1.2	2.8	-	0.3	
2017 Jan.	0.5	0.6	0.1	0.6	0.3	1.8	1.4	0.4	0.5	
Feb.	0.5	0.6	0.3	0.7	0.5	1.4	0.9	0.2	0.1	
Mar.	0.4	0.7	0.3	1.1	0.5	1.5	4.1	0.3	0.2	
Apr.	0.3	0.6	0.6	0.4	0.5	0.9	4.4	0.1	0.0	
May	0.5	0.7	0.6	0.4	0.5	1.2	2.7	0.4	0.3	
June	0.5	0.6	0.4	0.3	0.6	1.0	5.6	0.4	0.1	
July	0.5	0.4	1.0	0.2	0.4	1.0	3.1	0.5	0.4	
Aug.	0.6	0.7	0.8	0.2	0.7	1.1	3.9	0.4	0.2	
Sep.	0.7	0.6	0.4	0.4	0.6	1.0	4.0	0.4	0.3	
Oct.	0.5	0.5	0.6	0.6	0.2	1.0	5.4	0.6	0.3	
Nov.	0.5	0.5	0.3	0.5	0.5	0.9	4.1	0.3	0.2	
Dec. ¹	1.2	0.8	0.4	0.7	0.4	1.0	4.9	0.3	0.3	
2018 Jan.	0.8	0.7	0.6	0.6	0.6	1.4	4.0	0.7	0.7	
Feb.	1.0	0.8	0.6	0.4	0.7	1.4	6.1	0.8	0.6	
Mar.	0.6	0.4	0.5	0.8	0.3	1.1	1.9	0.6	0.5	
Apr.	0.6	0.6	0.7	0.5	0.5	1.3	2.7	0.5	0.4	
May	0.7	0.7	0.5	0.3	0.8	1.1	4.0	0.4	0.4	
June	0.5	0.3	0.4	0.4	0.2	0.9	2.6	0.6	0.4	
July	0.8	0.7	0.6	0.7	0.7	1.0	5.7	0.5	0.2	
Aug.	0.6	0.8	0.5	0.3	0.3	0.9	4.5	0.4	0.2	
Sep.	0.6	0.5	0.5	0.8	0.5	1.0	2.0	0.6	0.4	
Oct.	0.8	0.8	0.6	1.1	0.6	1.1	3.5	0.6	0.4	
Nov.	0.5	0.3	0.5	0.4	0.2	1.0	5.3	0.6	0.3	
Dec.	1.0	0.5	0.5	-	0.2	1.0	2.7	0.4	0.1	
2019 Jan.	0.6	0.7	0.7	0.6	0.7	1.0	1.4	0.5	0.1	
Feb.	0.4	0.5	0.6	0.6	0.2	1.5	6.0	0.2	0.1	
Mar.	0.3	0.7	0.5	0.8	0.3	1.0	2.9	0.2	0.0	
Apr.	0.4	0.7	0.9	0.6	0.6	0.7	2.8	0.1	0.0	
May	0.3	0.4	0.6	0.2	0.1	0.9	8.6	-	0.2	
June	0.4	0.6	0.1	0.2	0.6	0.8	3.2	-	0.2	
July	-	0.1	0.0	0.1	-	0.1	4.5	-	0.4	
Aug.	-	0.1	0.2	0.1	-	0.1	0.8	-	0.6	
Sep.	0.0	0.3	-	0.1	-	0.5	0.5	-	0.6	
Oct.	-	0.1	-	0.2	0.0	0.3	2.7	-	0.5	
Nov.	0.2	0.5	0.1	0.2	0.1	1.1	2.6	-	0.4	
Dec.	0.5	0.5	0.1	1.2	0.6	0.6	3.9	-	0.3	
2020 Jan.	0.2	0.1	0.0	0.1	-	0.2	1.2	-	0.3	
Feb.	0.1	-	0.1	0.1	-	0.2	3.7	-	0.4	

¹ Sectoral reclassification of debt securities.

II. Yields

2a) Yields on debt securities outstanding, by category of securities

% per annum

Period	Bank debt securities							Public debt securities				
	Total ¹	Total ¹	Mortgage Pfandbriefe	Public Pfandbriefe	Debt securities issued by special purpose credit institutions	Other bank debt securities	Corporate bonds (non-MFIs)	Total ¹	of which: Listed Federal securities			
									Total	of which: With a maturity of more than 9 up to and including 10 years ²		
2003	3.7	3.7	3.7	3.6	3.6	3.7	4.1	5.0	3.8	3.8	3.8	4.1
2004	3.7	3.6	3.6	3.5	3.5	3.6	3.8	4.0	3.7	3.7	3.7	4.0
2005	3.1	3.1	3.1	3.0	3.1	3.1	3.3	3.7	3.2	3.2	3.2	3.4
2006	3.8	3.8	3.8	3.8	3.8	3.8	3.9	4.2	3.7	3.7	3.7	3.8
2007	4.3	4.4	4.4	4.4	4.4	4.4	4.6	5.0	4.3	4.2	4.2	4.2
2008	4.2	4.5	4.5	4.5	4.3	4.3	5.0	6.3	4.0	4.0	4.0	4.0
2009	3.2	3.5	3.3	3.4	3.3	3.3	4.2	5.5	3.1	3.0	3.0	3.2
2010	2.5	2.7	2.5	2.6	2.6	2.6	3.1	4.0	2.4	2.4	2.4	2.7
2011	2.6	2.9	2.7	2.9	2.7	2.7	3.5	4.3	2.4	2.4	2.4	2.6
2012	1.4	1.6	1.4	1.5	1.4	1.4	2.4	3.7	1.3	1.3	1.3	1.5
2013	1.4	1.3	1.3	1.2	1.1	1.1	1.9	3.4	1.3	1.3	1.3	1.6
2014	1.0	0.9	0.9	0.9	0.7	0.7	1.4	3.0	1.0	1.0	1.0	1.2
2015	0.5	0.5	0.4	0.4	0.2	0.2	1.2	2.4	0.4	0.4	0.4	0.5
2016 ³	0.1	0.3	0.2	0.2	0.1	0.1	1.2	2.1	0.0	0.0	0.0	0.1
2017 ³	0.3	0.4	0.3	0.4	0.2	0.2	1.2	1.7	0.2	0.2	0.2	0.3
2018	0.4	0.6	0.4	0.5	0.4	0.4	1.3	2.5	0.3	0.3	0.3	0.4
2019	–	0.1	0.0	0.1	–	0.1	0.9	2.5	–	0.2	–	0.3
2016 June	0.0	0.2	0.1	0.1	–	0.1	1.1	2.0	–	0.1	–	0.0
July ³	–	0.1	0.0	0.0	–	0.3	1.1	1.7	–	0.2	–	0.2
Aug.	–	0.1	0.0	0.0	–	0.3	1.0	1.6	–	0.2	–	0.1
Sep.	–	0.1	0.0	0.0	–	0.2	1.1	1.6	–	0.2	–	0.1
Oct.	0.0	0.2	0.0	0.1	–	0.1	1.2	1.7	–	0.1	–	0.0
Nov.	0.2	0.4	0.2	0.2	0.1	0.1	1.4	2.0	0.1	0.0	0.0	0.2
Dec.	0.2	0.4	0.3	0.3	0.1	0.1	1.3	2.0	0.1	0.1	0.1	0.3
2017 Jan.	0.2	0.4	0.2	0.3	0.2	0.2	1.3	2.0	0.1	0.1	0.1	0.3
Feb.	0.2	0.4	0.3	0.3	0.2	0.2	1.3	1.9	0.1	0.1	0.1	0.3
Mar.	0.3	0.5	0.3	0.4	0.2	0.2	1.3	1.9	0.2	0.1	0.1	0.4
Apr.	0.2	0.4	0.2	0.3	0.2	0.2	1.2	1.8	0.1	0.1	0.1	0.2
May	0.3	0.5	0.3	0.4	0.2	0.2	1.2	1.7	0.2	0.2	0.2	0.3
June	0.2	0.4	0.2	0.3	0.2	0.2	1.1	1.7	0.1	0.1	0.1	0.3
July	0.4	0.5	0.4	0.4	0.4	0.4	1.2	1.7	0.3	0.3	0.3	0.5
Aug.	0.3	0.4	0.3	0.4	0.3	0.3	1.1	1.6	0.2	0.2	0.2	0.4
Sep.	0.3	0.4	0.3	0.3	0.2	0.2	1.1	1.7	0.2	0.2	0.2	0.4
Oct.	0.3	0.4	0.3	0.4	0.2	0.2	1.1	1.6	0.3	0.2	0.2	0.4
Nov.	0.3	0.4	0.3	0.3	0.2	0.2	1.0	1.6	0.2	0.2	0.2	0.3
Dec. ³	0.3	0.4	0.3	0.4	0.2	0.2	1.0	1.7	0.2	0.2	0.2	0.3
2018 Jan.	0.5	0.6	0.4	0.5	0.4	0.4	1.1	1.8	0.4	0.4	0.4	0.5
Feb.	0.6	0.7	0.5	0.6	0.6	0.6	1.3	2.1	0.5	0.5	0.5	0.7
Mar.	0.5	0.7	0.5	0.6	0.5	0.5	1.3	2.1	0.4	0.4	0.4	0.5
Apr.	0.5	0.6	0.5	0.5	0.4	0.4	1.3	2.3	0.4	0.4	0.4	0.5
May	0.5	0.6	0.5	0.6	0.4	0.4	1.3	2.3	0.4	0.3	0.3	0.5
June	0.4	0.6	0.4	0.5	0.4	0.4	1.4	2.4	0.3	0.2	0.2	0.3
July	0.3	0.5	0.3	0.5	0.4	0.4	1.3	2.5	0.2	0.2	0.2	0.3
Aug.	0.3	0.5	0.4	0.5	0.3	0.3	1.3	2.5	0.2	0.2	0.2	0.3
Sep.	0.4	0.6	0.4	0.5	0.4	0.4	1.4	2.7	0.3	0.3	0.3	0.4
Oct.	0.5	0.6	0.5	0.6	0.4	0.4	1.4	2.8	0.3	0.3	0.3	0.4
Nov.	0.4	0.6	0.4	0.6	0.4	0.4	1.4	3.0	0.3	0.2	0.2	0.3
Dec.	0.3	0.6	0.4	0.5	0.3	0.3	1.5	3.3	0.2	0.1	0.1	0.2
2019 Jan.	0.3	0.5	0.4	0.5	0.3	0.3	1.4	3.3	0.2	0.1	0.1	0.1
Feb.	0.2	0.4	0.3	0.4	0.2	0.2	1.3	3.0	0.1	0.0	0.0	0.1
Mar.	0.2	0.4	0.2	0.4	0.1	0.1	1.2	2.7	0.0	0.0	0.0	0.0
Apr.	0.1	0.3	0.2	0.3	0.1	0.1	1.1	2.6	0.0	–	0.1	–
May	0.1	0.2	0.1	0.2	0.0	0.0	1.1	2.6	–	0.1	–	0.1
June	–	0.1	0.0	0.0	–	0.1	1.0	2.5	–	0.2	–	0.3
July	–	0.0	–	0.1	–	0.2	0.7	2.4	–	0.3	–	0.4
Aug.	–	0.2	–	0.3	–	0.4	0.5	2.2	–	0.6	–	0.7
Sep.	–	0.4	–	0.3	–	0.3	0.6	2.3	–	0.5	–	0.6
Oct.	–	0.2	–	0.2	–	0.3	0.7	2.4	–	0.4	–	0.5
Nov.	–	0.1	–	0.1	–	0.2	0.7	2.2	–	0.3	–	0.4
Dec.	–	0.1	–	0.1	–	0.1	0.8	2.1	–	0.2	–	0.3
2020 Jan.	–	0.1	–	0.1	–	0.1	0.7	2.0	–	0.2	–	0.3
Feb.	–	0.2	–	0.2	–	0.3	0.6	1.8	–	0.4	–	0.5
Mar.	–	0.2	–	0.1	–	0.1	1.3	3.5	–	0.4	–	0.5

¹ Yields for comparable categories of residual maturity, see Table II. 2b ² Only bonds eligible as underlying instruments for futures contracts; calculated as an unweighted average. ³ Sectoral reclassification of debt securities.

II. Yields

2b) Yields on debt securities outstanding, by residual maturity *

% per annum

Period	Mean residual maturity of ... years									
	More than 1 and up to 2	More than 2 and up to 3	More than 3 and up to 4	More than 4 and up to 5	More than 5 and up to 6	More than 6 and up to 7	More than 7			
							Total	of which		
							More than 7 and up to 8	More than 8 and up to 9	More than 9 and up to 10	
Debt securities, total										
2003	2.6	2.8	3.1	3.4	3.6	3.8	4.2	3.9	4.0	4.1
2004	2.5	2.8	3.1	3.3	3.5	3.7	4.2	3.9	4.0	4.1
2005	2.4	2.6	2.7	2.9	3.0	3.1	3.5	3.2	3.3	3.4
2006	3.5	3.5	3.6	3.7	3.7	3.8	3.9	3.8	3.8	3.8
2007	4.2	4.3	4.3	4.2	4.3	4.3	4.4	4.3	4.3	4.3
2008	4.1	4.0	4.0	4.1	4.1	4.2	4.3	4.1	4.2	4.2
2009	1.9	2.2	2.6	2.8	3.1	3.2	3.7	3.4	3.5	3.4
2010	1.1	1.5	1.7	2.1	2.3	2.6	3.1	2.7	2.8	2.9
2011	1.5	1.7	2.0	2.2	2.5	2.6	3.0	2.6	2.7	2.9
2012	0.4	0.5	0.7	1.0	1.2	1.3	1.9	1.4	1.5	1.7
2013	0.3	0.4	0.6	0.9	1.0	1.2	1.9	1.3	1.5	1.7
2014	0.2	0.2	0.4	0.5	0.7	0.9	1.5	1.0	1.2	1.3
2015	-	0.1	0.0	0.2	0.3	0.3	0.8	0.4	0.5	0.8
2016	-	0.4	0.3	0.2	0.1	0.0	0.4	0.0	0.3	0.4
2017	-	0.6	0.4	0.3	0.2	0.0	0.1	0.7	0.4	0.6
2018	-	0.4	0.3	0.1	0.2	0.4	0.8	0.6	0.6	0.6
2019	-	0.5	0.4	0.3	0.3	0.1	0.0	0.1	0.1	0.0
2018 Jan.	-	0.5	0.3	0.1	0.0	0.2	0.3	0.8	0.5	0.6
Feb.	-	0.5	0.2	0.1	0.2	0.4	0.5	1.0	0.7	0.8
Mar.	-	0.5	0.3	0.1	0.1	0.3	0.5	0.9	0.6	0.7
Apr.	-	0.5	0.3	0.1	0.1	0.3	0.4	0.8	0.5	0.7
May	-	0.5	0.3	0.1	0.1	0.3	0.5	0.8	0.6	0.6
June	-	0.4	0.4	0.2	0.0	0.2	0.4	0.7	0.5	0.5
July	-	0.4	0.4	0.2	0.0	0.1	0.4	0.6	0.4	0.4
Aug.	-	0.4	0.4	0.2	0.0	0.1	0.4	0.7	0.5	0.4
Sep.	-	0.4	0.3	0.1	0.1	0.2	0.4	0.7	0.6	0.5
Oct.	-	0.4	0.3	0.1	0.2	0.2	0.5	0.8	0.6	0.5
Nov.	-	0.4	0.3	0.1	0.1	0.2	0.4	0.7	0.6	0.5
Dec.	-	0.4	0.3	0.1	0.1	0.1	0.4	0.6	0.5	0.4
2019 Jan.	-	0.4	0.3	0.1	0.0	0.1	0.3	0.5	0.4	0.3
Feb.	-	0.3	0.3	0.1	0.0	0.1	0.2	0.5	0.3	0.2
Mar.	-	0.4	0.3	0.2	0.1	0.1	0.2	0.4	0.3	0.1
Apr.	-	0.4	0.3	0.2	0.1	0.0	0.1	0.4	0.2	0.1
May	-	0.4	0.4	0.3	0.2	0.0	0.1	0.3	0.1	0.0
June	-	0.5	0.5	0.4	0.3	0.1	0.1	0.1	0.1	0.2
July	-	0.6	0.5	0.4	0.4	0.2	0.2	0.0	0.3	0.3
Aug.	-	0.7	0.6	0.6	0.6	0.4	0.4	0.3	0.5	0.5
Sep.	-	0.6	0.6	0.5	0.5	0.4	0.3	0.3	0.5	0.5
Oct.	-	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.4	0.3
Nov.	-	0.5	0.4	0.3	0.3	0.2	0.1	0.0	0.3	0.2
Dec.	-	0.5	0.4	0.3	0.3	0.1	0.1	0.0	0.2	0.1
2020 Jan.	-	0.4	0.3	0.3	0.3	0.1	0.1	0.0	0.2	0.2
Feb.	-	0.5	0.4	0.4	0.4	0.3	0.2	0.1	0.4	0.3
Mar.	-	0.4	0.3	0.3	0.2	0.1	0.1	0.2	0.3	0.2
2020 Mar. 2	-	0.59	0.50	0.50	0.45	0.37	0.34	0.35	0.52	0.50
3	-	0.56	0.49	0.48	0.42	0.34	0.31	0.28	0.47	0.44
4	-	0.59	0.52	0.51	0.46	0.38	0.34	0.33	0.52	0.48
5	-	0.60	0.52	0.52	0.46	0.38	0.34	0.32	0.51	0.48
6	-	0.60	0.53	0.54	0.50	0.40	0.38	0.41	0.57	0.54
9	-	0.63	0.54	0.56	0.52	0.43	0.41	0.53	0.63	0.64
10	-	0.60	0.52	0.51	0.47	0.37	0.34	0.43	0.57	0.54
11	-	0.62	0.54	0.55	0.49	0.38	0.35	0.48	0.58	0.55
12	-	0.59	0.53	0.55	0.48	0.36	0.33	0.49	0.58	0.55
13	-	0.50	0.45	0.44	0.36	0.25	0.21	0.36	0.47	0.42
16	-	0.46	0.38	0.37	0.28	0.16	0.13	0.27	0.38	0.34
17	-	0.40	0.33	0.29	0.17	0.04	0.01	0.15	0.26	0.19
18	-	0.26	0.23	0.21	0.04	0.09	0.16	0.04	0.13	0.09
19	-	0.19	0.15	0.13	0.01	0.13	0.19	0.00	0.12	0.06
20	-	0.18	0.09	0.07	0.06	0.18	0.25	0.00	0.08	0.04
23	-	0.14	0.11	0.10	0.02	0.13	0.18	0.08	0.17	0.13
24	-	0.10	0.09	0.07	0.03	0.16	0.22	0.05	0.14	0.09
25	-	0.08	0.06	0.05	0.05	0.18	0.26	0.02	0.09	0.05
26	-	0.09	0.07	0.05	0.05	0.17	0.23	0.02	0.11	0.07
27	-	0.19	0.13	0.14	0.06	0.06	0.13	0.07	0.22	0.17
30	-	0.20	0.15	0.18	0.11	0.01	0.08	0.15	0.28	0.25
31	-	0.20	0.12	0.15	0.07	0.04	0.12	0.10	0.24	0.20

* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included.

II. Yields

still: 2b) Yields on debt securities outstanding, by residual maturity *

% per annum

Period	Mean residual maturity of ... years									
	More than 1 and up to 2	More than 2 and up to 3	More than 3 and up to 4	More than 4 and up to 5	More than 5 and up to 6	More than 6 and up to 7	More than 7			
							Total	of which		
							More than 7 and up to 8	More than 8 and up to 9	More than 9 and up to 10	
Bank debt securities										
2003	2.6	2.9	3.2	3.5	3.7	3.9	4.2	4.0	4.2	4.3
2004	2.6	2.9	3.2	3.4	3.6	3.8	4.1	4.0	4.1	4.2
2005	2.5	2.6	2.8	3.0	3.1	3.2	3.4	3.3	3.4	3.5
2006	3.6	3.6	3.7	3.8	3.8	3.8	4.0	3.9	3.9	4.0
2007	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5
2008	4.6	4.5	4.4	4.4	4.5	4.5	4.7	4.6	4.6	4.7
2009	2.4	2.7	3.1	3.3	3.6	3.8	4.1	4.0	4.2	4.0
2010	1.5	1.9	2.2	2.4	2.7	2.9	3.2	3.1	3.1	3.3
2011	2.0	2.3	2.5	2.8	3.1	3.0	3.4	3.1	3.5	3.5
2012	0.8	1.0	1.2	1.4	1.6	1.7	2.2	2.1	2.2	2.1
2013	0.5	0.7	0.9	1.1	1.2	1.5	1.9	1.8	1.8	2.1
2014	0.3	0.4	0.5	0.7	0.9	1.1	1.5	1.2	1.4	1.7
2015	0.1	0.1	0.1	0.3	0.5	0.5	1.0	0.8	0.9	1.2
2016	0.1	0.2	0.0	0.1	0.2	0.3	0.8	0.4	0.8	1.0
2017	0.3	0.2	0.0	0.2	0.3	0.4	0.9	0.7	0.9	0.9
2018	0.2	0.0	0.2	0.3	0.4	0.7	1.0	0.9	1.0	1.0
2019	0.2	0.1	0.2	0.1	0.1	0.3	0.4	0.3	0.3	0.3
2018 Jan.	0.3	0.0	0.2	0.3	0.4	0.5	1.0	0.9	0.9	0.9
Feb.	0.3	0.1	0.2	0.4	0.6	0.7	1.2	1.0	1.0	1.2
Mar.	0.3	0.0	0.2	0.3	0.5	0.7	1.1	0.9	1.0	1.0
Apr.	0.2	0.0	0.2	0.3	0.5	0.6	1.0	0.8	1.0	1.0
May	0.2	0.0	0.2	0.3	0.5	0.7	1.1	0.9	1.0	1.0
June	0.2	0.1	0.2	0.2	0.4	0.6	1.0	0.9	1.0	1.0
July	0.2	0.1	0.2	0.2	0.3	0.6	1.0	0.8	0.9	0.9
Aug.	0.1	0.1	0.2	0.2	0.4	0.6	1.0	0.9	0.9	0.9
Sep.	0.1	0.0	0.2	0.2	0.4	0.6	1.0	0.9	0.9	1.1
Oct.	0.1	0.0	0.2	0.3	0.5	0.8	1.1	1.0	1.0	1.1
Nov.	0.1	0.0	0.2	0.3	0.4	0.7	1.0	0.9	0.9	1.0
Dec.	0.0	0.0	0.2	0.3	0.4	0.7	1.0	0.9	0.9	1.0
2019 Jan.	0.0	0.2	0.1	0.2	0.4	0.7	0.9	0.8	0.8	0.9
Feb.	0.0	0.2	0.1	0.2	0.4	0.5	0.8	0.7	0.8	0.8
Mar.	0.0	0.1	0.0	0.2	0.3	0.4	0.7	0.7	0.6	0.6
Apr.	0.1	0.0	0.0	0.1	0.2	0.4	0.6	0.6	0.5	0.5
May	0.1	0.0	0.1	0.0	0.2	0.4	0.5	0.4	0.4	0.4
June	0.2	0.1	0.2	0.1	0.1	0.2	0.4	0.3	0.2	0.3
July	0.3	0.2	0.3	0.3	0.1	0.1	0.2	0.1	0.1	0.2
Aug.	0.4	0.3	0.4	0.4	0.3	0.1	0.1	0.2	0.2	0.1
Sep.	0.3	0.3	0.4	0.4	0.2	0.0	0.0	0.2	0.1	0.1
Oct.	0.3	0.3	0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.1
Nov.	0.2	0.2	0.2	0.2	0.0	0.2	0.2	0.1	0.1	0.2
Dec.	0.2	0.2	0.2	0.1	0.0	0.2	0.2	0.1	0.2	0.2
2020 Jan.	0.2	0.2	0.2	0.1	0.0	0.1	0.2	0.1	0.1	0.3
Feb.	0.2	0.3	0.3	0.2	0.1	0.0	0.1	0.0	0.1	0.1
Mar.	0.2	0.1	0.0	0.0	0.1	0.4	0.2	0.1	0.1	0.3
2020 Mar. 2	0.27	0.39	0.33	0.28	0.20	0.00	0.06	0.17	0.18	0.03
3	0.27	0.38	0.31	0.27	0.18	0.02	0.04	0.14	0.14	0.04
4	0.30	0.41	0.34	0.29	0.21	0.01	0.06	0.17	0.17	0.02
5	0.30	0.41	0.34	0.29	0.21	0.01	0.05	0.17	0.17	0.02
6	0.28	0.39	0.33	0.28	0.21	0.01	0.08	0.18	0.19	0.01
9	0.21	0.38	0.32	0.27	0.21	0.00	0.14	0.21	0.24	0.02
10	0.23	0.37	0.29	0.23	0.14	0.08	0.08	0.15	0.17	0.01
11	0.24	0.38	0.30	0.24	0.14	0.07	0.09	0.15	0.18	0.03
12	0.18	0.35	0.27	0.21	0.11	0.11	0.09	0.14	0.18	0.02
13	0.03	0.24	0.15	0.09	0.02	0.25	0.04	0.01	0.05	0.18
16	0.10	0.18	0.08	0.01	0.11	0.34	0.10	0.06	0.03	0.23
17	0.26	0.12	0.01	0.10	0.23	0.46	0.20	0.15	0.13	0.33
18	0.47	0.01	0.09	0.25	0.37	0.64	0.31	0.27	0.25	0.43
19	0.58	0.05	0.14	0.31	0.41	0.72	0.35	0.32	0.27	0.45
20	0.57	0.11	0.23	0.37	0.50	0.79	0.42	0.39	0.36	0.55
23	0.60	0.13	0.23	0.36	0.46	0.75	0.38	0.35	0.30	0.49
24	0.69	0.13	0.26	0.36	0.49	0.77	0.41	0.37	0.34	0.53
25	0.69	0.14	0.28	0.38	0.50	0.80	0.45	0.41	0.37	0.53
26	0.60	0.14	0.25	0.37	0.50	0.79	0.45	0.40	0.38	0.57
27	0.51	0.09	0.19	0.29	0.42	0.70	0.38	0.32	0.29	0.49
30	0.49	0.06	0.16	0.23	0.35	0.64	0.30	0.25	0.20	0.39
31	0.53	0.08	0.17	0.26	0.39	0.66	0.33	0.27	0.25	0.45

* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included.

II. Yields

still: 2b) Yields on debt securities outstanding, by residual maturity *

% per annum

Period	Mean residual maturity of ... years									
	More than 1 and up to 2	More than 2 and up to 3	More than 3 and up to 4	More than 4 and up to 5	More than 5 and up to 6	More than 6 and up to 7	More than 7			
							Total	of which		
							More than 7 and up to 8	More than 8 and up to 9	More than 9 and up to 10	
Public Pfandbriefe										
2003	2.6	2.9	3.2	3.4	3.7	3.9	4.1	4.0	4.1	4.3
2004	2.5	2.8	3.1	3.4	3.6	3.8	4.1	3.9	4.1	4.2
2005	2.5	2.6	2.8	2.9	3.0	3.2	3.4	3.3	3.4	3.5
2006	3.5	3.6	3.7	3.7	3.8	3.8	4.0	3.9	3.9	4.0
2007	4.3	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5
2008	4.6	4.4	4.4	4.4	4.5	4.5	4.6	4.5	4.6	4.7
2009	2.3	2.6	3.0	3.3	3.5	3.8	4.1	3.8	4.5	4.1
2010	1.5	1.8	2.2	2.4	2.6	2.8	3.2	3.1	3.1	3.3
2011	2.0	2.3	2.5	2.8	2.9	3.2	3.4	3.2	3.3	3.5
2012	0.8	0.9	1.2	1.4	1.7	1.9	2.3	2.1	2.3	2.4
2013	0.5	0.7	0.8	1.1	1.4	1.6	2.1	1.9	1.9	1.9
2014	0.3	0.4	0.5	0.7	0.9	1.1	1.5	1.3	1.3	1.5
2015	0.0	0.1	0.2	0.2	0.3	0.4	0.8	0.6	0.7	0.8
2016	-	0.1	-	0.1	-	0.0	0.1	0.5	0.3	0.4
2017	-	0.2	-	0.1	-	0.0	0.1	0.7	0.5	0.6
2018	-	0.2	-	0.1	-	0.2	0.4	0.6	0.9	0.7
2019	-	0.3	-	0.2	-	0.1	-	0.0	0.3	0.3
2018 Jan.	-	0.2	-	0.1	-	0.3	0.5	0.8	0.6	1.0
Feb.	-	0.2	-	0.1	-	0.3	0.5	0.7	0.9	1.1
Mar.	-	0.2	-	0.1	-	0.2	0.4	0.6	0.6	0.9
Apr.	-	0.2	-	0.1	-	0.2	0.4	0.6	0.9	0.9
May	-	0.2	-	0.1	-	0.2	0.4	0.6	0.6	0.9
June	-	0.2	-	0.1	-	0.1	0.3	0.5	0.5	0.9
July	-	0.2	-	0.1	-	0.1	0.3	0.5	0.8	0.8
Aug.	-	0.2	-	0.1	-	0.1	0.3	0.5	0.5	0.8
Sep.	-	0.2	-	0.1	-	0.1	0.2	0.4	0.6	0.9
Oct.	-	0.2	-	0.1	-	0.2	0.5	0.6	0.9	0.9
Nov.	-	0.1	-	0.1	-	0.2	0.4	0.5	0.9	0.9
Dec.	-	0.1	-	0.0	-	0.2	0.4	0.5	0.9	0.8
2019 Jan.	-	0.1	-	0.0	-	0.1	0.2	0.5	0.6	0.8
Feb.	-	0.1	-	0.1	-	0.1	0.3	0.3	0.7	0.7
Mar.	-	0.1	-	0.0	-	0.1	0.2	0.3	0.6	0.6
Apr.	-	0.1	-	0.0	-	0.1	0.2	0.2	0.6	0.5
May	-	0.2	-	0.1	-	0.0	0.1	0.4	0.2	0.4
June	-	0.3	-	0.2	-	0.3	-	0.1	0.2	0.2
July	-	0.4	-	0.3	-	0.4	-	0.2	-	0.1
Aug.	-	0.5	-	0.4	-	0.5	-	0.4	-	0.2
Sep.	-	0.4	-	0.4	-	0.4	-	0.4	-	0.2
Oct.	-	0.4	-	0.3	-	0.3	-	0.2	-	0.0
Nov.	-	0.3	-	0.2	-	0.2	-	0.2	-	0.1
Dec.	-	0.3	-	0.2	-	0.1	-	0.1	-	0.1
2020 Jan.	-	0.3	-	0.2	-	0.1	-	0.1	-	0.1
Feb.	-	0.3	-	0.3	-	0.2	-	0.3	-	0.1
Mar.	-	0.1	-	0.2	-	0.2	-	0.2	-	0.0
2020 Mar. 2	-	0.39	-	0.43	-	0.38	-	0.30	-	0.22
3	-	0.40	-	0.42	-	0.33	-	0.29	-	0.17
4	-	0.42	-	0.44	-	0.39	-	0.32	-	0.19
5	-	0.42	-	0.44	-	0.36	-	0.32	-	0.20
6	-	0.40	-	0.42	-	0.39	-	0.32	-	0.23
9	-	0.40	-	0.44	-	0.41	-	0.38	-	0.31
10	-	0.40	-	0.43	-	0.39	-	0.35	-	0.19
11	-	0.41	-	0.44	-	0.40	-	0.37	-	0.24
12	-	0.25	-	0.35	-	0.42	-	0.32	-	0.18
13	-	0.13	-	0.25	-	0.28	-	0.20	-	0.04
16	-	0.12	-	0.24	-	0.26	-	0.15	-	0.03
17	-	0.10	-	0.21	-	0.23	-	0.12	-	0.09
18	-	0.07	-	0.17	-	0.11	-	0.03	-	0.17
19	-	0.03	-	0.12	-	0.15	-	0.06	-	0.26
20	-	0.01	-	0.07	-	0.10	-	0.06	-	0.28
23	-	0.13	-	0.04	-	0.10	-	0.03	-	0.20
24	-	0.14	-	0.03	-	0.09	-	0.03	-	0.25
25	-	0.15	-	0.00	-	0.06	-	0.09	-	0.30
26	-	0.17	-	0.01	-	0.09	-	0.10	-	0.29
27	-	0.15	-	0.05	-	0.12	-	0.06	-	0.20
30	-	0.13	-	0.06	-	0.08	-	0.02	-	0.14
31	-	0.14	-	0.05	-	0.08	-	0.01	-	0.17

* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included.

II. Yields

still: 2b) Yields on debt securities outstanding, by residual maturity *

% per annum

Period	Mean residual maturity of ... years									
	More than 1 and up to 2	More than 2 and up to 3	More than 3 and up to 4	More than 4 and up to 5	More than 5 and up to 6	More than 6 and up to 7	More than 7			
							Total	of which		
							More than 7 and up to 8	More than 8 and up to 9	More than 9 and up to 10	
Mortgage Pfandbriefe										
2003	2.7	3.0	3.2	3.5	3.7	3.9	4.2	4.1	4.3	4.3
2004	2.6	2.9	3.2	3.4	3.6	3.8	4.1	4.0	4.1	4.3
2005	2.5	2.7	2.8	3.0	3.1	3.2	3.4	3.3	3.4	3.5
2006	3.6	3.6	3.7	3.7	3.8	3.9	4.0	3.9	3.9	4.0
2007	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5
2008	4.5	4.5	4.5	4.5	4.5	4.5	4.6	4.5	4.6	4.7
2009	2.4	2.7	3.0	3.3	3.4	3.6	4.0	4.0	4.1	4.1
2010	1.5	1.7	2.1	2.3	2.6	2.9	3.2	3.1	3.2	3.3
2011	1.9	2.2	2.5	2.7	2.9	3.1	3.4	3.2	3.3	3.5
2012	0.9	1.0	1.2	1.4	1.7	1.8	2.2	2.1	2.1	2.3
2013	0.5	0.6	0.9	1.1	1.4	1.5	1.9	1.7	1.9	2.0
2014	0.3	0.4	0.6	0.7	0.9	1.0	1.4	1.2	1.3	1.6
2015	0.1	0.1	0.1	0.2	0.3	0.5	0.7	0.6	0.8	0.7
2016	0.1	0.1	0.1	0.0	0.1	0.2	0.4	0.3	0.3	0.4
2017	0.2	0.2	0.1	0.1	0.2	0.3	0.6	0.4	0.6	0.7
2018	0.3	0.1	0.1	0.2	0.4	0.5	0.8	0.7	0.7	0.9
2019	0.3	0.3	0.2	0.1	0.1	0.0	0.3	0.1	0.2	0.3
2018 Jan.	0.3	0.2	0.0	0.2	0.3	0.4	0.7	0.6	0.7	0.8
Feb.	0.3	0.1	0.1	0.3	0.5	0.6	0.9	0.8	0.8	0.9
Mar.	0.3	0.1	0.1	0.2	0.4	0.5	0.9	0.7	0.8	0.9
Apr.	0.3	0.1	0.1	0.2	0.4	0.5	0.8	0.7	0.7	0.8
May	0.3	0.1	0.1	0.2	0.4	0.5	0.8	0.7	0.8	0.9
June	0.2	0.2	0.0	0.2	0.3	0.5	0.8	0.6	0.7	0.8
July	0.3	0.2	0.0	0.2	0.3	0.4	0.7	0.6	0.6	0.8
Aug.	0.3	0.2	0.0	0.2	0.3	0.4	0.7	0.6	0.7	0.8
Sep.	0.2	0.1	0.0	0.2	0.3	0.5	0.8	0.6	0.7	0.8
Oct.	0.2	0.1	0.1	0.3	0.4	0.6	0.8	0.7	0.8	0.9
Nov.	0.2	0.1	0.1	0.3	0.4	0.5	0.8	0.6	0.8	0.9
Dec.	0.2	0.1	0.1	0.2	0.3	0.5	0.8	0.6	0.7	0.9
2019 Jan.	0.2	0.1	0.0	0.2	0.3	0.4	0.7	0.6	0.7	0.8
Feb.	0.2	0.1	0.0	0.1	0.2	0.4	0.6	0.5	0.6	0.7
Mar.	0.2	0.1	0.0	0.1	0.2	0.3	0.6	0.4	0.5	0.6
Apr.	0.2	0.1	0.1	0.0	0.1	0.2	0.5	0.3	0.4	0.5
May	0.3	0.2	0.1	0.0	0.0	0.1	0.4	0.2	0.3	0.4
June	0.3	0.3	0.2	0.2	0.1	0.0	0.2	0.1	0.2	0.2
July	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.0	0.1
Aug.	0.5	0.5	0.5	0.4	0.4	0.3	0.2	0.3	0.2	0.2
Sep.	0.4	0.5	0.4	0.4	0.4	0.3	0.1	0.3	0.2	0.1
Oct.	0.4	0.4	0.3	0.3	0.3	0.2	0.0	0.2	0.1	0.0
Nov.	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.1
Dec.	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.1
2020 Jan.	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.1
Feb.	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.1	0.0
Mar.	0.2	0.3	0.2	0.2	0.2	0.1	0.0	0.1	0.0	0.0
2020 Mar. 2	0.42	0.43	0.39	0.41	0.38	0.33	0.18	0.29	0.26	0.14
3	0.41	0.42	0.38	0.38	0.35	0.29	0.14	0.25	0.21	0.12
4	0.43	0.44	0.40	0.41	0.37	0.32	0.17	0.28	0.25	0.15
5	0.43	0.44	0.40	0.41	0.38	0.32	0.17	0.28	0.25	0.14
6	0.41	0.43	0.39	0.41	0.37	0.32	0.19	0.29	0.27	0.17
9	0.38	0.44	0.41	0.44	0.40	0.36	0.25	0.33	0.32	0.21
10	0.42	0.43	0.38	0.38	0.34	0.29	0.19	0.26	0.24	0.21
11	0.43	0.44	0.39	0.40	0.35	0.31	0.20	0.28	0.26	0.15
12	0.37	0.43	0.36	0.38	0.33	0.30	0.22	0.28	0.27	0.21
13	0.15	0.30	0.24	0.25	0.20	0.19	0.09	0.16	0.12	0.04
16	0.12	0.27	0.21	0.22	0.16	0.14	0.03	0.10	0.06	0.03
17	0.10	0.25	0.17	0.18	0.08	0.08	0.03	0.05	0.02	0.05
18	0.11	0.21	0.13	0.08	0.01	0.02	0.13	0.06	0.12	0.13
19	0.05	0.18	0.11	0.03	0.01	0.04	0.17	0.10	0.15	0.19
20	0.03	0.11	0.03	0.02	0.07	0.12	0.21	0.13	0.21	0.22
23	0.07	0.07	0.04	0.00	0.04	0.08	0.15	0.08	0.15	0.15
24	0.08	0.10	0.01	0.03	0.06	0.07	0.19	0.12	0.18	0.20
25	0.13	0.09	0.01	0.06	0.07	0.12	0.24	0.15	0.27	0.25
26	0.11	0.07	0.01	0.05	0.08	0.10	0.23	0.13	0.25	0.24
27	0.09	0.10	0.04	0.01	0.01	0.03	0.16	0.06	0.17	0.17
30	0.12	0.12	0.04	0.07	0.05	0.00	0.11	0.02	0.11	0.11
31	0.10	0.11	0.05	0.05	0.02	0.04	0.14	0.05	0.15	0.13

* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included.

II. Yields

still: 2b) Yields on debt securities outstanding, by residual maturity *

% per annum

Period	Mean residual maturity of ... years									
	More than 1 and up to 2	More than 2 and up to 3	More than 3 and up to 4	More than 4 and up to 5	More than 5 and up to 6	More than 6 and up to 7	More than 7			
							Total	of which		
							More than 7 and up to 8	More than 8 and up to 9	More than 9 and up to 10	
Public debt securities										
2003	2.4	2.7	3.0	3.3	3.5	3.7	4.3	3.9	4.0	4.1
2004	2.4	2.7	3.0	3.2	3.4	3.7	4.2	3.8	4.0	4.0
2005	2.4	2.5	2.7	2.8	3.0	3.1	3.5	3.2	3.3	3.4
2006	3.4	3.5	3.5	3.6	3.7	3.7	3.9	3.7	3.8	3.8
2007	4.1	4.1	4.2	4.2	4.2	4.2	4.3	4.2	4.2	4.3
2008	3.7	3.7	3.8	3.8	3.9	4.0	4.3	4.0	4.1	4.1
2009	1.4	1.8	2.2	2.5	2.7	2.9	3.7	3.1	3.3	3.3
2010	0.8	1.1	1.5	1.8	2.1	2.3	3.1	2.5	2.7	2.8
2011	1.1	1.4	1.7	1.9	2.2	2.3	2.9	2.4	2.6	2.7
2012	0.2	0.3	0.4	0.6	0.9	1.1	1.9	1.2	1.4	1.6
2013	0.2	0.3	0.4	0.6	0.8	1.0	1.9	1.2	1.4	1.6
2014	0.1	0.1	0.2	0.4	0.5	0.7	1.5	0.9	1.1	1.2
2015	-	0.2	-	0.1	-	0.1	0.2	0.7	0.3	0.4
2016	-	0.6	-	0.5	-	0.3	-	0.2	0.3	0.1
2017	-	0.7	-	0.6	-	0.4	-	0.2	0.0	0.6
2018	-	0.6	-	0.5	-	0.3	-	0.2	0.7	0.3
2019	-	0.6	-	0.6	-	0.4	-	0.4	0.0	0.3
2018 Jan.	-	0.6	-	0.5	-	0.3	-	0.1	0.0	0.2
Feb.	-	0.6	-	0.4	-	0.2	-	0.4	0.9	0.5
Mar.	-	0.6	-	0.5	-	0.3	-	0.1	0.3	0.8
Apr.	-	0.6	-	0.5	-	0.3	-	0.1	0.1	0.2
May	-	0.6	-	0.5	-	0.3	-	0.1	0.3	0.7
June	-	0.6	-	0.5	-	0.4	-	0.2	0.0	0.1
July	-	0.6	-	0.5	-	0.4	-	0.2	0.1	0.6
Aug.	-	0.6	-	0.5	-	0.4	-	0.3	0.1	0.6
Sep.	-	0.6	-	0.5	-	0.3	-	0.2	0.0	0.7
Oct.	-	0.6	-	0.4	-	0.3	-	0.1	0.0	0.2
Nov.	-	0.6	-	0.5	-	0.3	-	0.2	0.1	0.6
Dec.	-	0.6	-	0.5	-	0.4	-	0.3	0.1	0.5
2019 Jan.	-	0.6	-	0.5	-	0.4	-	0.3	0.1	0.0
Feb.	-	0.5	-	0.5	-	0.4	-	0.3	0.2	0.1
Mar.	-	0.5	-	0.5	-	0.4	-	0.3	0.2	0.1
Apr.	-	0.6	-	0.5	-	0.4	-	0.3	0.2	0.3
May	-	0.6	-	0.6	-	0.5	-	0.3	0.2	0.2
June	-	0.6	-	0.7	-	0.6	-	0.4	0.0	0.4
July	-	0.7	-	0.7	-	0.6	-	0.5	0.1	0.1
Aug.	-	0.8	-	0.8	-	0.8	-	0.7	0.4	0.4
Sep.	-	0.8	-	0.8	-	0.8	-	0.7	0.4	0.7
Oct.	-	0.7	-	0.7	-	0.6	-	0.6	0.5	0.2
Nov.	-	0.6	-	0.6	-	0.5	-	0.5	0.4	0.1
Dec.	-	0.6	-	0.6	-	0.5	-	0.4	0.4	0.1
2020 Jan.	-	0.6	-	0.5	-	0.4	-	0.4	0.1	0.4
Feb.	-	0.6	-	0.6	-	0.6	-	0.6	0.2	0.5
Mar.	-	0.7	-	0.7	-	0.6	-	0.6	0.3	0.6
2020 Mar. 2	-	0.74	-	0.74	-	0.74	-	0.71	0.67	0.43
3	-	0.70	-	0.72	-	0.72	-	0.67	0.62	0.36
4	-	0.73	-	0.75	-	0.76	-	0.71	0.67	0.41
5	-	0.74	-	0.76	-	0.77	-	0.72	0.67	0.40
6	-	0.76	-	0.80	-	0.82	-	0.77	0.73	0.50
9	-	0.82	-	0.85	-	0.87	-	0.86	0.80	0.64
10	-	0.79	-	0.83	-	0.81	-	0.78	0.75	0.53
11	-	0.82	-	0.86	-	0.86	-	0.83	0.80	0.58
12	-	0.79	-	0.89	-	0.90	-	0.87	0.81	0.76
13	-	0.76	-	0.82	-	0.81	-	0.75	0.66	0.47
16	-	0.75	-	0.77	-	0.75	-	0.69	0.64	0.38
17	-	0.73	-	0.74	-	0.69	-	0.61	0.53	0.25
18	-	0.65	-	0.67	-	0.60	-	0.50	0.42	0.35
19	-	0.59	-	0.60	-	0.56	-	0.46	0.40	0.35
20	-	0.58	-	0.53	-	0.51	-	0.41	0.37	0.30
23	-	0.56	-	0.56	-	0.56	-	0.48	0.44	0.39
24	-	0.52	-	0.54	-	0.53	-	0.46	0.41	0.34
25	-	0.47	-	0.49	-	0.49	-	0.43	0.37	0.29
26	-	0.47	-	0.49	-	0.48	-	0.42	0.38	0.32
27	-	0.52	-	0.56	-	0.58	-	0.54	0.49	0.41
30	-	0.55	-	0.59	-	0.62	-	0.58	0.54	0.47
31	-	0.54	-	0.56	-	0.58	-	0.54	0.50	0.42

* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included.

II. Yields

2c) Yields on listed Federal securities outstanding - average, highest and lowest rates

% per annum

Period	Total			of which:								
	Average rate	Lowest rate	Highest rate	Residual maturity of more than 3 an up to 5 years			Residual maturity of more than 5 an up to 8 years			Residual maturity of more than 8 an up to 15 years		
				Average rate	Lowest rate	Highest rate	Average rate	Lowest rate	Highest rate	Average rate	Lowest rate	Highest rate
2003	3.81	3.17	4.19	3.12	2.40	3.56	3.65	2.89	4.07	4.03	3.37	4.41
2004	3.75	3.25	4.10	3.10	2.70	3.48	3.62	3.11	3.98	3.99	3.43	4.34
2005	3.18	2.84	3.52	2.72	2.34	3.08	3.05	2.70	3.40	3.31	2.94	3.73
2006	3.74	3.16	4.05	3.55	2.93	3.91	3.67	3.08	4.00	3.75	3.20	4.09
2007	4.24	3.91	4.70	4.13	3.75	4.63	4.18	3.85	4.67	4.21	3.86	4.68
2008	3.99	2.81	4.78	3.68	2.26	4.78	3.83	2.60	4.72	3.98	2.89	4.67
2009	3.03	2.71	3.40	2.18	1.86	2.54	2.79	2.50	3.22	3.27	2.93	3.68
2010	2.43	2.29	2.57	1.50	1.36	1.66	2.21	2.06	2.37	2.73	2.58	2.89
2011	2.39	2.23	2.59	1.60	1.44	1.81	2.17	2.00	2.38	2.59	2.42	2.80
2012	1.27	0.92	1.72	0.36	0.08	0.78	0.93	0.58	1.43	1.47	1.00	1.96
2013	1.33	0.98	1.67	0.41	0.11	0.74	0.94	0.53	1.37	1.63	1.17	2.07
2014	1.02	0.48	1.65	0.22	- 0.06	0.71	0.64	0.14	1.35	1.24	0.55	2.03
2015	0.41	0.05	0.80	- 0.12	- 0.31	0.07	0.13	- 0.12	0.50	0.52	0.06	1.03
2016	0.00	- 0.29	0.46	- 0.51	- 0.70	- 0.17	- 0.28	- 0.53	0.14	0.13	- 0.22	0.65
2017	0.17	- 0.06	0.37	- 0.51	- 0.76	- 0.31	- 0.15	- 0.38	0.06	0.35	0.15	0.56
2018	0.29	0.06	0.55	- 0.32	- 0.55	- 0.12	0.04	- 0.21	0.33	0.40	0.15	0.75
2019	- 0.26	- 0.73	0.13	- 0.62	- 0.98	- 0.39	- 0.47	- 0.91	- 0.14	- 0.27	- 0.75	0.17
2016 June	- 0.09	- 0.23	0.05	- 0.54	- 0.63	- 0.46	- 0.35	- 0.46	- 0.24	0.01	- 0.13	0.17
July	- 0.21	- 0.29	- 0.15	- 0.62	- 0.68	- 0.58	- 0.46	- 0.53	- 0.41	- 0.13	- 0.22	- 0.06
Aug.	- 0.22	- 0.25	- 0.19	- 0.61	- 0.64	- 0.59	- 0.45	- 0.49	- 0.42	- 0.13	- 0.17	- 0.08
Sep.	- 0.19	- 0.28	- 0.11	- 0.62	- 0.69	- 0.57	- 0.44	- 0.52	- 0.36	- 0.09	- 0.20	0.02
Oct.	- 0.11	- 0.23	0.01	- 0.58	- 0.66	- 0.51	- 0.37	- 0.48	- 0.26	0.00	- 0.14	0.15
Nov.	0.04	- 0.03	0.15	- 0.52	- 0.61	- 0.43	- 0.23	- 0.30	- 0.13	0.22	0.09	0.34
Dec.	0.08	- 0.03	0.17	- 0.60	- 0.70	- 0.50	- 0.22	- 0.32	- 0.13	0.30	0.17	0.41
2017 Jan.	0.12	0.00	0.23	- 0.55	- 0.66	- 0.46	- 0.20	- 0.31	- 0.09	0.31	0.18	0.44
Feb.	0.08	- 0.06	0.20	- 0.63	- 0.76	- 0.49	- 0.23	- 0.38	- 0.08	0.31	0.17	0.44
Mar.	0.13	0.00	0.21	- 0.56	- 0.70	- 0.49	- 0.17	- 0.33	- 0.08	0.36	0.22	0.44
Apr.	0.06	- 0.04	0.16	- 0.60	- 0.70	- 0.49	- 0.26	- 0.35	- 0.15	0.24	0.15	0.34
May	0.18	0.11	0.23	- 0.51	- 0.58	- 0.45	- 0.14	- 0.22	- 0.08	0.36	0.30	0.43
June	0.12	0.08	0.25	- 0.53	- 0.60	- 0.41	- 0.21	- 0.26	- 0.06	0.29	0.25	0.43
July	0.32	0.27	0.37	- 0.36	- 0.41	- 0.31	- 0.00	- 0.05	0.06	0.49	0.43	0.56
Aug.	0.19	0.10	0.28	- 0.48	- 0.57	- 0.41	- 0.10	- 0.20	0.00	0.38	0.28	0.49
Sep.	0.19	0.12	0.27	- 0.49	- 0.55	- 0.43	- 0.11	- 0.19	- 0.03	0.37	0.28	0.46
Oct.	0.24	0.18	0.28	- 0.45	- 0.51	- 0.42	- 0.08	- 0.14	- 0.03	0.40	0.34	0.45
Nov.	0.19	0.15	0.23	- 0.49	- 0.53	- 0.45	- 0.13	- 0.18	- 0.09	0.34	0.29	0.39
Dec.	0.17	- 0.06	0.37	- 0.46	- 0.52	- 0.36	- 0.11	- 0.17	- 0.01	0.33	0.27	0.41
2018 Jan.	0.37	0.30	0.47	- 0.28	- 0.35	- 0.15	0.07	- 0.01	0.21	0.49	0.42	0.62
Feb.	0.50	0.45	0.55	- 0.16	- 0.20	- 0.12	0.28	0.23	0.33	0.69	0.63	0.75
Mar.	0.39	0.29	0.46	- 0.25	- 0.32	- 0.19	0.16	0.06	0.24	0.55	0.44	0.63
Apr.	0.37	0.32	0.44	- 0.26	- 0.30	- 0.21	0.11	0.07	0.19	0.50	0.45	0.59
May	0.34	0.06	0.44	- 0.29	- 0.55	- 0.20	0.10	- 0.21	0.20	0.47	0.17	0.58
June	0.23	0.16	0.32	- 0.39	- 0.46	- 0.30	- 0.03	- 0.12	0.08	0.35	0.27	0.46
July	0.19	0.15	0.25	- 0.41	- 0.44	- 0.35	- 0.09	- 0.13	- 0.03	0.27	0.23	0.33
Aug.	0.18	0.12	0.28	- 0.39	- 0.45	- 0.30	- 0.05	- 0.12	0.05	0.29	0.22	0.39
Sep.	0.27	0.18	0.35	- 0.30	- 0.39	- 0.22	0.02	- 0.08	0.12	0.36	0.26	0.45
Oct.	0.30	0.21	0.39	- 0.28	- 0.37	- 0.20	0.05	- 0.05	0.14	0.39	0.28	0.49
Nov.	0.23	0.17	0.29	- 0.36	- 0.41	- 0.30	- 0.04	- 0.11	0.03	0.30	0.24	0.37
Dec.	0.12	0.09	0.18	- 0.43	- 0.46	- 0.39	- 0.14	- 0.17	- 0.10	0.18	0.15	0.25
2019 Jan.	0.08	0.05	0.13	- 0.44	- 0.47	- 0.40	- 0.19	- 0.23	- 0.14	0.11	0.05	0.17
Feb.	0.02	- 0.01	0.06	- 0.45	- 0.47	- 0.42	- 0.22	- 0.25	- 0.17	0.03	- 0.01	0.09
Mar.	- 0.02	- 0.14	0.08	- 0.46	- 0.54	- 0.39	- 0.26	- 0.36	- 0.17	- 0.03	- 0.15	0.09
Apr.	- 0.06	- 0.10	0.00	- 0.50	- 0.53	- 0.46	- 0.31	- 0.35	- 0.25	- 0.08	- 0.12	- 0.01
May	- 0.15	- 0.25	- 0.04	- 0.57	- 0.65	- 0.49	- 0.38	- 0.49	- 0.28	- 0.17	- 0.29	- 0.05
June	- 0.31	- 0.35	- 0.25	- 0.67	- 0.71	- 0.63	- 0.53	- 0.57	- 0.48	- 0.34	- 0.39	- 0.28
July	- 0.37	- 0.44	- 0.27	- 0.73	- 0.78	- 0.66	- 0.59	- 0.65	- 0.50	- 0.37	- 0.45	- 0.25
Aug.	- 0.63	- 0.71	- 0.44	- 0.89	- 0.96	- 0.77	- 0.80	- 0.87	- 0.64	- 0.64	- 0.73	- 0.44
Sep.	- 0.57	- 0.73	- 0.48	- 0.83	- 0.98	- 0.75	- 0.76	- 0.91	- 0.67	- 0.60	- 0.75	- 0.50
Oct.	- 0.45	- 0.59	- 0.35	- 0.72	- 0.83	- 0.63	- 0.63	- 0.77	- 0.54	- 0.47	- 0.61	- 0.36
Nov.	- 0.34	- 0.40	- 0.26	- 0.62	- 0.67	- 0.58	- 0.52	- 0.58	- 0.45	- 0.35	- 0.42	- 0.26
Dec.	- 0.30	- 0.34	- 0.23	- 0.59	- 0.63	- 0.54	- 0.47	- 0.52	- 0.41	- 0.30	- 0.35	- 0.23
2020 Jan.	- 0.30	- 0.42	- 0.20	- 0.59	- 0.67	- 0.53	- 0.47	- 0.59	- 0.38	- 0.29	- 0.44	- 0.18
Feb.	- 0.43	- 0.59	- 0.36	- 0.67	- 0.79	- 0.63	- 0.59	- 0.73	- 0.53	- 0.45	- 0.62	- 0.37
Mar.	- 0.55	- 0.83	- 0.32	- 0.77	- 1.00	- 0.55	- 0.67	- 0.94	- 0.41	- 0.54	- 0.85	- 0.29

III. 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
2003	2.26	2.66	3.03	3.35	3.62	3.86	4.05	4.22	4.36	4.48
2004	2.28	2.53	2.76	2.96	3.14	3.30	3.44	3.57	3.69	3.79
2005	2.71	2.86	2.95	3.02	3.08	3.14	3.20	3.25	3.30	3.34
2006	3.85	3.89	3.90	3.90	3.91	3.93	3.94	3.96	3.98	3.99
2007	4.07	4.08	4.11	4.15	4.20	4.25	4.30	4.36	4.41	4.46
2008	1.61	1.83	2.04	2.26	2.46	2.66	2.83	3.00	3.15	3.28
2009	0.77	1.33	1.79	2.18	2.52	2.80	3.06	3.27	3.47	3.63
2010	0.56	0.87	1.25	1.63	1.99	2.31	2.59	2.83	3.03	3.19
2011	0.02	0.14	0.36	0.61	0.87	1.13	1.38	1.60	1.81	1.99
2012	0.04	0.04	0.05	0.20	0.39	0.59	0.80	1.01	1.20	1.38
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	0.15	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
2017 June	0.66	0.60	0.51	0.38	0.23	0.07	0.08	0.23	0.36	0.48
July	0.72	0.68	0.56	0.40	0.23	0.05	0.12	0.28	0.42	0.55
Aug.	0.77	0.74	0.66	0.53	0.37	0.21	0.05	0.10	0.23	0.35
Sep.	0.76	0.73	0.63	0.47	0.30	0.12	0.04	0.20	0.33	0.46
Oct.	0.81	0.77	0.66	0.52	0.35	0.19	0.02	0.14	0.28	0.41
Nov.	0.77	0.71	0.59	0.45	0.29	0.13	0.03	0.17	0.30	0.42
Dec.	0.72	0.64	0.50	0.34	0.18	0.02	0.12	0.25	0.37	0.48
2018 Jan.	0.66	0.54	0.35	0.16	0.03	0.20	0.34	0.47	0.59	0.69
Feb.	0.66	0.56	0.37	0.17	0.02	0.19	0.35	0.48	0.60	0.70
Mar.	0.69	0.60	0.45	0.28	0.11	0.05	0.19	0.32	0.43	0.53
Apr.	0.66	0.56	0.41	0.23	0.06	0.11	0.26	0.39	0.50	0.60
May	0.68	0.65	0.54	0.39	0.23	0.06	0.09	0.22	0.34	0.44
June	0.69	0.65	0.54	0.40	0.25	0.10	0.04	0.16	0.28	0.38
July	0.67	0.60	0.48	0.34	0.19	0.04	0.09	0.22	0.33	0.43
Aug.	0.65	0.61	0.51	0.38	0.25	0.11	0.03	0.15	0.26	0.35
Sep.	0.62	0.54	0.40	0.25	0.09	0.05	0.18	0.30	0.40	0.49
Oct.	0.72	0.65	0.51	0.35	0.20	0.05	0.08	0.20	0.30	0.40
Nov.	0.68	0.64	0.53	0.40	0.26	0.12	0.01	0.13	0.24	0.33
Dec.	0.70	0.65	0.56	0.44	0.31	0.18	0.06	0.06	0.16	0.25
2019 Jan.	0.59	0.58	0.51	0.43	0.33	0.22	0.12	0.03	0.06	0.15
Feb.	0.57	0.55	0.49	0.42	0.32	0.22	0.12	0.03	0.07	0.15
Mar.	0.61	0.62	0.59	0.54	0.47	0.39	0.30	0.22	0.14	0.07
Apr.	0.59	0.60	0.56	0.49	0.41	0.32	0.23	0.14	0.05	0.03
May	0.64	0.69	0.69	0.65	0.59	0.52	0.44	0.36	0.28	0.20
June	0.70	0.75	0.75	0.71	0.66	0.59	0.52	0.45	0.38	0.31
July	0.72	0.78	0.79	0.77	0.73	0.68	0.62	0.55	0.49	0.43
Aug.	0.85	0.92	0.95	0.95	0.93	0.90	0.85	0.80	0.76	0.71
Sep.	0.73	0.80	0.82	0.80	0.78	0.74	0.70	0.66	0.62	0.57
Oct.	0.67	0.69	0.69	0.67	0.64	0.60	0.56	0.51	0.47	0.42
Nov.	0.64	0.66	0.66	0.64	0.61	0.56	0.52	0.47	0.42	0.37
Dec.	0.69	0.63	0.58	0.54	0.49	0.44	0.37	0.31	0.25	0.19
2020 Jan.	0.64	0.68	0.68	0.67	0.64	0.61	0.56	0.52	0.47	0.42
Feb.	0.73	0.77	0.79	0.79	0.77	0.75	0.72	0.69	0.65	0.61
Mar.	0.69	0.70	0.71	0.70	0.68	0.64	0.60	0.56	0.51	0.47
2020 Mar.	0.69	0.70	0.71	0.70	0.68	0.64	0.60	0.56	0.51	0.47

Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments

* Interest rates on (national) 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.

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

b) Term structure of interest rates in the debt securities market - estimated values, Pfandbriefe

% 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
2003	2.49	2.81	3.18	3.50	3.77	3.99	4.18	4.35	4.50	4.63
2004	2.48	2.73	2.96	3.16	3.34	3.51	3.66	3.80	3.93	4.05
2005	2.81	3.03	3.12	3.19	3.27	3.35	3.43	3.52	3.61	3.69
2006	4.01	4.01	3.99	3.99	4.00	4.02	4.05	4.07	4.09	4.12
2007	4.77	4.62	4.58	4.59	4.63	4.67	4.71	4.75	4.79	4.82
2008	3.12	3.10	3.24	3.42	3.59	3.75	3.88	4.00	4.11	4.21
2009	1.43	1.98	2.45	2.82	3.12	3.37	3.58	3.77	3.94	4.09
2010	1.54	1.80	2.14	2.47	2.77	3.05	3.29	3.50	3.69	3.85
2011	1.76	1.62	1.72	1.90	2.11	2.34	2.57	2.79	3.01	3.22
2012	0.42	0.51	0.64	0.80	0.99	1.19	1.41	1.64	1.87	2.10
2013	0.50	0.60	0.84	1.12	1.40	1.67	1.92	2.15	2.37	2.58
2014	0.25	0.23	0.27	0.34	0.44	0.54	0.65	0.76	0.87	0.97
2015	0.10	0.10	0.14	0.25	0.39	0.54	0.69	0.84	0.97	1.09
2016	-	0.03	0.07	0.06	0.09	0.16	0.26	0.38	0.51	0.63
2017	-	0.12	0.03	0.08	0.20	0.33	0.46	0.59	0.72	0.84
2018	-	0.11	0.04	0.04	0.15	0.29	0.44	0.59	0.73	0.85
2019	-	0.21	0.20	-	0.15	0.09	-	0.02	0.05	0.11
2017 June	-	0.06	-	0.02	0.07	0.18	0.30	0.44	0.57	0.71
July	-	0.12	-	0.04	0.06	0.18	0.32	0.46	0.60	0.74
Aug.	-	0.09	-	0.09	-	0.03	0.08	0.22	0.36	0.50
Sep.	-	0.10	-	0.05	0.04	0.16	0.29	0.43	0.57	0.72
Oct.	-	0.11	-	0.09	-	0.01	0.10	0.24	0.38	0.53
Nov.	-	0.15	-	0.09	0.01	0.12	0.25	0.38	0.51	0.64
Dec.	-	0.12	-	0.03	0.08	0.20	0.33	0.46	0.59	0.72
2018 Jan.	-	0.14	-	0.04	0.13	0.31	0.48	0.63	0.77	0.89
Feb.	-	0.16	-	0.07	0.11	0.30	0.48	0.64	0.78	0.91
Mar.	-	0.16	-	0.09	0.06	0.23	0.39	0.54	0.67	0.80
Apr.	-	0.15	-	0.07	0.09	0.26	0.42	0.57	0.71	0.84
May	-	0.18	-	0.06	0.04	0.16	0.30	0.45	0.60	0.74
June	-	0.19	-	0.04	0.03	0.13	0.27	0.42	0.57	0.71
July	-	0.17	-	0.07	0.06	0.20	0.35	0.50	0.64	0.77
Aug.	-	0.13	-	0.06	0.05	0.18	0.32	0.46	0.60	0.73
Sep.	-	0.15	-	0.02	0.13	0.28	0.43	0.58	0.71	0.84
Oct.	-	0.15	-	0.00	0.11	0.23	0.37	0.52	0.66	0.80
Nov.	-	0.12	-	0.01	0.09	0.21	0.35	0.49	0.63	0.77
Dec.	-	0.11	-	0.04	0.04	0.15	0.29	0.44	0.59	0.73
2019 Jan.	-	0.10	-	0.04	0.05	0.17	0.29	0.42	0.55	0.68
Feb.	-	0.09	-	0.00	0.08	0.16	0.27	0.39	0.52	0.65
Mar.	-	0.12	-	0.03	-	0.00	0.05	0.13	0.23	0.35
Apr.	-	0.12	-	0.04	0.01	0.07	0.15	0.24	0.35	0.46
May	-	0.26	-	0.08	-	0.11	-	0.09	-	0.02
June	-	0.22	-	0.25	-	0.23	-	0.18	-	0.10
July	-	0.26	-	0.31	-	0.30	-	0.26	-	0.20
Aug.	-	0.40	-	0.45	-	0.46	-	0.44	-	0.41
Sep.	-	0.40	-	0.42	-	0.40	-	0.37	-	0.33
Oct.	-	0.28	-	0.24	-	0.22	-	0.20	-	0.17
Nov.	-	0.27	-	0.21	-	0.20	-	0.16	-	0.11
Dec.	-	0.21	-	0.20	-	0.15	-	0.09	-	0.02
2020 Jan.	-	0.24	-	0.26	-	0.24	-	0.21	-	0.16
Feb.	-	0.32	-	0.33	-	0.32	-	0.30	-	0.27
Mar.	-	0.04	-	0.14	-	0.14	-	0.09	-	0.03
2020 Mar.	-	0.04	-	0.14	-	0.14	-	0.09	-	0.03

Memo item: yields, derived from the term of structure of interest rates, on Pfandbriefe with annual coupon payments

2020 Mar.	-	0.04	-	0.14	-	0.14	-	0.09	-	0.03	0.02	0.08	0.12	0.16	0.19
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* Interest rates on (national) 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 Pfandbriefe (mortgage Pfandbriefe and public Pfandbriefe) with a residual maturity of at least three months. The interest rates are estimated using a non-linear, parametric approach.

Explanatory notes

Yields

Unlike the nominal interest rate, the bond yield indicates the interest actually received per annum. Its calculation takes account of all the factors influencing the earnings from a debt security. These comprise not only the nominal interest rate but also the frequency of interest payments, the purchase and redemption price, maturity and the mode of redemption (falling due en bloc, falling due in instalments). Yields calculated in this way permit a comparison of the interest actually received on different bonds or a comparison between bonds and other forms of investment (eg savings deposits, the yield on which is wholly dependent on the interest rate).

The yield statistics cover debt securities with a maximum maturity according to the terms of issue of over four years. Structured Products and the like, bank debt securities with unscheduled redemptions, zero coupon bonds, floating rate notes and bonds not denominated in Euro issued by residents are not included. The yields of redeemable issues are based on the computed residual maturity. The calculation of total yield and of yield by type of security covers only securities with a mean residual maturity of more than three years. Group yields are weighted by the amounts outstanding at market prices (up to December 2001, by nominal amounts outstanding) or (in the case of issue yields) the amounts sold of the debt securities included in the calculation. Owing to the monthly changes in the composition of the debt securities included in the calculation, the movement of the changes in the interest rate level but - particularly in the computed yield is to be attributed not only to movement case of the issue yields - also to structural influences (e.g. changes in the maturity pattern). The monthly figures on yields outstanding are calculated on the basis of the yields based on the XETRA prices on all the trading days in a month; up to 23 May 2011 on the basis of spot rates. The annual figures are the unweighted means of the monthly figures; 12 monthly figures were not always available for the computation, especially in the case of issue yields.

Term structure of interest rates

The term structure of interest rates in the bond market shows the relation between the interest rates and maturities of zero coupon bonds. The data on the term structure of interest rates published here are es-

timates derived from the observed yields to maturity of coupon bonds outstanding. In contrast to the implied assumption calculating yields to maturity that all payment flows of a coupon bond carry the same rate of return (namely the yield to maturity), the estimation of the term structure of interest rates assumes a different rate of return for each payment flow of a coupon bond at the interest rate corresponding to the current market conditions on the respective payment date. The individual payment flows of a coupon bond are regarded as redemptions of zero coupon bonds with different maturities and interest rates. The prices and interest rates of these notional individual zero coupon bonds are unknown, however, since they are only traded as a bundle in the form of the coupon bond. The price of the coupon which is interpreted as the aggregate price of the component zero coupon bonds, reflects the interest rate expectations of market participants which are to be captured in the envisaged term structure of interest rates. If the individual payment flows of a coupon bond were discounted at the respective interest rates of this (unknown) term structure of interest rates, the sum of the present values should theoretically equal the market price of the coupon bond and hence also its market yield.

This being so, the term structure of interest rates can be calculated with the help of a non-linear optimisation procedure. In this process, the individual payment flows of the coupon bonds are first discounted at the interest rates of a tentatively specified term structure and the notional coupon bond yields to maturity which are derived from the sum of the present values of the payment flows are compared with the actual yields to maturity observed in the market. The specified term structure is varied until the deviations between the notional yields to maturity and the market yields of the coupon bonds included in the estimate are minimised. The term structure of interest rates thus derived then approximately matches the term structure in the bond market which determines the market prices of coupon bonds.

$$z(T, \beta, \tau) = \beta_0 + \beta_1 \left(\frac{1 - \exp(-T/\tau_1)}{(T/\tau_1)} \right) + \beta_2 \left(\frac{1 - \exp(-T/\tau_1)}{(T/\tau_1)} - \exp(-T/\tau_1) \right) + \beta_3 \left(\frac{1 - \exp(-T/\tau_2)}{(T/\tau_2)} - \exp(-T/\tau_2) \right)$$

The estimation of the term structure of interest rates is based on listed Federal bonds, five-year Federal notes and Federal Treasury notes as well as on listed mortgage and public Pfandbriefe. These securities are largely homogeneous. To avoid distortions at the short end of the term structure, securities with a residual maturity (time to maturity) of less than three months are not included. However, the inclusion of bonds with a residual maturity of between three months and one year ensures that the one-year interest rate can be reliably estimated.

For the purpose of the estimation, an assumption is made about the functional relation between interest rates and residual maturities. In the estimation approach used here, the interest rate is defined as the sum of a constant and various exponential terms (where the residual maturity has a negative sign in the exponent) and as a function of a total of six parameters: where $z(T, \beta, \tau)$ denotes the interest rate for maturity T in years as a function of the parameter vectors $(\beta_0, \beta_1, \beta_2, \beta_3)$ and (τ_1, τ_2) denotes the parameters to be estimated.

This parametric approach is sufficiently flexible to reflect the data constellations observed in the market. These include monotonically rising, declining, U-shaped, inverted U-shaped and S-shaped curves. Unlike non-parametric approaches, this estimation procedure smooths out individual kinks in the curve so that the estimation results are relatively little influenced by individual observations. This makes them less suited to identify, for example, abnormalities in individual maturity segments or in individual securities. However, they provide curves which are relatively free of outliers and thus are easier to interpret for monetary policy analysis.

For further details of the process of estimating term structure data see Deutsche Bundesbank, Estimating the term structure of interest rates, Monthly Report, October 1997, pages 61-66.

■ Securities indices

To present the general price and earnings trends of securities, price indices and performance indices of shares or debt securities have to be computed. While pure price indices only reflect the price movements of constant securities deposits, performance indices show the value movements of a portfolio, in which current earnings are reinvested.

The CDAX share price index of Deutsche Börse AG shows the average price movements of all shares of companies domiciled in Germany listed on the Frankfurt stock ex-

change in the Prime Standard and General Standard segments. When computing the index, price reductions and price distortions which arise in the case of capital changes (capital increases with subscription rights, capital adjustments, issues of bonus shares, capital reductions, admissions and retirements of public limited companies) are eliminated. By contrast, price movements in connection with the distribution of dividends are not eliminated.

The Composite DAX (CDAX) of Deutsche Börse AG is the performance index matching the CDAX share price index. It does not describe the price movements but the value movements of the securities portfolio analysed, with dividends and the proceeds of subscription rights being reinvested in the portfolio.

The German share index (DAX) of Deutsche Börse AG is also a performance index which describes the value movements of a portfolio of 30 standard shares. The index has been calculated on an original basis since the end of 1987; values dating even further back have been obtained by Deutsche Börse AG by linking up with the share price index published by the Börsenzeitung; from 1981, the share price index consisted of an unweighted performance index and, before that, of a price index.

Unlike the German share index (DAX), the DAX share price index tracks only the price movements of a portfolio comprising 30 blue chips. Changes in capital are treated in the same way as in the CDAX share price index. It contains no retrospective calculations for the period prior to 1987.

The German bond index (REX) is calculated by Deutsche Börse AG as the weighted average of the prices of 30 synthetic bonds with coupons of 6%, 7 1/2% and 9% and with whole-year (residual) maturities of one to ten years that are constant over time. The prices are derived from the corresponding yields of an econometrically estimated yield pattern. They are weighted jointly at constant weights which represent the significance of the individual bond categories in the German bond market, taking the average of the years from 1967 to 1991. The bonds in the REX portfolio have an average coupon of 7.44% and an average maturity of 5.49 years.

The REX performance index (REXP) of Deutsche Börse AG is the performance index matching the debt securities portfolio of the German bond index (REX). It depicts the value movement of the REX portfolio, with coupon payments being reinvested in the portfolio, while retaining the portfolio structure. It is assumed that the average coupon income, amounting to 7.44% per annum, accrues uniformly over all the days of a year and is reinvested reg-

ularly. The daily reinvested coupon income is discounted in such a way that, after taking due account of the compound interest effect running for less than one year, precisely the average annual income of 7.44% (seen over the entire year) is obtained.

The iBoxx € Germany bond price index shows the price movements of listed Federal securities. It is part of the iBoxx € bond index family, which depicts the market for fixed interest securities denominated in euro or the legacy currencies of the euro area. Unlike the German bond index (REX), the portfolio in the iBoxx € Germany bond price index is not composed of synthetic securities but of Federal

securities actually outstanding in the market. The index basket is adjusted at the start of each month. The prices included in the calculation are based on current data from a fixed group of banks.

The iBoxx € Germany performance index is the performance index matching the iBoxx € Germany bond price index. In line with the monthly adjustment of the index basket, due coupon payments are reinvested in the portfolio only at the start of each month. The accrued interest accumulating between coupon payments is, however, included in the daily index calculation.