



# Capital market indicators

## November 2023

Statistical Series

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## Notes

### 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

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 | Data unknown, not to be published or not meaningful |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

Discrepancies in the totals are due to rounding.

## I. 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 |      |      |      |      |      |      |      |
| 2006              | 3.8                  | 3.8   | 3.8                  | 3.8                | 4.0   | 3.8                        | 3.3   | 3.8                        | 3.8                                      | 3.8  |      |      |      |      |      |      |
| 2007              | 4.3                  | 4.5   | 4.4                  | 4.4                | 4.5   | 4.5                        | 7.6   | 4.3                        | 4.2                                      | 4.2  |      |      |      |      |      |      |
| 2008              | 4.3                  | 4.5   | 4.5                  | 4.4                | 4.4   | 4.7                        | 8.0   | 4.0                        | 3.9                                      | 3.9  |      |      |      |      |      |      |
| 2009              | 3.5                  | 3.5   | 3.5                  | 3.4                | 3.1   | 3.8                        | 5.9   | 3.1                        | 3.0                                      | 3.0  |      |      |      |      |      |      |
| 2010              | 2.6                  | 2.7   | 2.6                  | 2.6                | 2.4   | 3.0                        | 6.2   | 2.4                        | 2.4                                      | 2.4  |      |      |      |      |      |      |
| 2011              | 2.7                  | 3.0   | 3.0                  | 3.1                | 2.8   | 3.1                        | 6.6   | 2.5                        | 2.3                                      | 2.3  |      |      |      |      |      |      |
| 2012              | 1.6                  | 1.8   | 1.7                  | 1.8                | 1.5   | 2.3                        | 5.5   | 1.3                        | 1.2                                      | 1.2  |      |      |      |      |      |      |
| 2013              | 1.6                  | 1.8   | 1.5                  | 1.6                | 1.2   | 2.3                        | 4.8   | 1.3                        | 1.2                                      | 1.2  |      |      |      |      |      |      |
| 2014              | 1.2                  | 1.3   | 1.1                  | 1.3                | 0.9   | 1.8                        | 5.5   | 1.1                        | 0.9                                      | 0.9  |      |      |      |      |      |      |
| 2015              | 0.7                  | 0.7   | 0.5                  | 0.6                | 0.4   | 1.3                        | 5.1   | 0.4                        | 0.4                                      | 0.4  |      |      |      |      |      |      |
| 2016 <sup>1</sup> | 0.4                  | 0.6   | 0.3                  | 0.4                | 0.4   | 1.2                        | 3.8   | 0.1                        | –  | 0.1  |      |      |      |      |      |      |
| 2017 <sup>1</sup> | 0.6                  | 0.6   | 0.5                  | 0.5                | 0.5   | 1.2                        | 3.7   | 0.4                        | 0.2                                      | 0.2  |      |      |      |      |      |      |
| 2018              | 0.7                  | 0.6   | 0.5                  | 0.5                | 0.5   | 1.1                        | 3.8   | 0.6                        | 0.4                                      | 0.4  |      |      |      |      |      |      |
| 2019              | 0.2                  | 0.4   | 0.3                  | 0.4                | 0.3   | 0.8                        | 3.3   | –                          | 0.1                                      | 0.3  |      |      |      |      |      |      |
| 2020              | 0.1                  | 0.1   | –                    | 0.1                | 0.1   | 0.0                        | 2.6   | –                          | 0.3                                      | 0.5  |      |      |      |      |      |      |
| 2021              | 0.0                  | 0.1   | –                    | 0.1                | 0.1   | 0.0                        | 1.6   | –                          | 0.2                                      | 0.3  |      |      |      |      |      |      |
| 2022              | 1.6                  | 1.9   | 1.8                  | 1.4                | 1.8   | 2.4                        | 3.8   | 1.3                        | 1.3                                      | 1.2  |      |      |      |      |      |      |
| 2020 Mar.         | 0.05                 | 0.06  | –                    | 0.02               | 0.00  | 0.07                       | 0.28  | 3.93                       | –  | 0.15 | –    | 0.52 |      |      |      |      |
| Apr.              | 0.41                 | 0.15  | –                    | 0.11               | 0.00  | 0.06                       | 0.71  | 2.17                       | –  | 0.21 | –    | 0.45 |      |      |      |      |
| May               | 0.02                 | 0.21  | –                    | 0.16               | 0.30  | 0.08                       | 0.38  | 1.33                       | –  | 0.38 | –    | 0.49 |      |      |      |      |
| June              | –                    | 0.01  | 0.15                 | –                  | 0.15  | –                          | 0.19  | 0.60                       | 1.20                                     | –    | 0.27 | –    | 0.32 |      |      |      |
| July              | 0.21                 | 0.06  | –                    | 0.19               | 1.00  | –                          | 0.00  | 0.55                       | 2.39                                     | –    | 0.44 | –    | 0.52 |      |      |      |
| Aug.              | –                    | 0.40  | –                    | 0.18               | 0.30  | –                          | 0.33  | 0.07                       | 4.88                                     | –    | 0.46 | –    | 0.52 |      |      |      |
| Sep.              | –                    | 0.13  | –                    | 0.13               | 0.20  | –                          | 0.12  | –                          | 1.68                                     | –    | 0.38 | –    | 0.49 |      |      |      |
| Oct.              | 0.00                 | –     | 0.23                 | –                  | 0.35  | –                          | 0.05  | –                          | 0.44                                     | –    | 0.40 | –    | 0.56 |      |      |      |
| Nov.              | –                    | 0.21  | –                    | 0.05               | 0.03  | –                          | 0.21  | –                          | 0.37                                     | –    | 0.43 | –    | 0.68 |      |      |      |
| Dec.              | 0.36                 | 0.31  | –                    | 0.18               | –   | –                          | 0.30  | –                          | 0.32                                     | –    | 2.10 | –    | 0.73 |      |      |      |
| 2021 Jan.         | –                    | 0.14  | –                    | 0.25               | –   | 0.17                       | –     | 0.28                       | –  | 0.36 | 0.30 | 0.58 | –    | 0.23 | –    | 0.54 |
| Feb.              | 0.06                 | –     | 0.07                 | –                  | 0.13  | –                          | 0.15  | –                          | 0.04                                     | 0.24 | 1.51 | –    | 0.15 | –    | 0.40 |      |
| Mar.              | 0.03                 | –     | 0.05                 | –                  | 0.08  | –                          | 0.05  | –                          | 0.26                                     | 0.36 | 1.28 | –    | 0.19 | –    | 0.35 |      |
| Apr.              | 0.36                 | –     | 0.00                 | –                  | 0.05  | –                          | 0.04  | –                          | 0.05                                     | 0.42 | 3.05 | –    | 0.19 | –    | 0.29 |      |
| May               | 0.30                 | –     | 0.30                 | –                  | 0.30  | –                          | 0.25  | –                          | 0.27                                     | 0.44 | 2.41 | –    | 0.08 | –    | 0.12 |      |
| June              | 0.05                 | –     | 0.14                 | –                  | 0.25  | –                          | –     | –                          | 0.04                                     | 0.53 | 0.90 | –    | 0.17 | –    | 0.26 |      |
| July              | –                    | 0.08  | –                    | 0.11               | –   | 0.02                       | –     | 0.26                       | –  | 0.30 | 0.33 | 2.59 | –    | 0.34 | –    | 0.38 |
| Aug.              | –                    | 0.30  | –                    | 0.28               | –   | 0.34                       | –     | 0.19                       | –  | 0.31 | 0.38 | 1.31 | –    | 0.50 | –    | 0.52 |
| Sep.              | –                    | 0.06  | –                    | 0.08               | –   | 0.24                       | –     | 0.33                       | –  | 0.13 | 0.35 | 0.69 | –    | 0.22 | –    | 0.30 |
| Oct.              | –                    | 0.02  | –                    | 0.25               | –   | 0.03                       | –     | 0.16                       | –  | 0.36 | 0.54 | 2.30 | –    | 0.16 | –    | 0.25 |
| Nov.              | 0.15                 | –     | 0.23                 | –                  | 0.11  | –                          | 0.17  | –                          | 0.20                                     | 0.68 | 1.49 | –    | 0.25 | –    | 0.31 |      |
| Dec.              | –                    | 0.24  | –                    | 0.43               | –   | 0.13                       | –     | 0.50                       | –  | 0.52 | 0.52 | 1.22 | –    | 0.41 | –    | 0.47 |
| 2022 Jan.         | 0.33                 | –     | 0.35                 | –                  | 0.20  | –                          | 0.49  | –                          | 0.35                                     | 0.62 | 1.38 | –    | 0.16 | –    | 0.10 |      |
| Feb.              | 0.48                 | –     | 0.55                 | –                  | 0.65  | –                          | 0.45  | –                          | 0.47                                     | 1.16 | 3.97 | –    | 0.28 | –    | 0.19 |      |
| Mar.              | 0.71                 | –     | 0.75                 | –                  | 0.62  | –                          | 0.59  | –                          | 0.76                                     | 1.35 | 1.98 | –    | 0.39 | –    | 0.22 |      |
| Apr.              | 1.20                 | –     | 1.33                 | –                  | 1.21  | –                          | 1.14  | –                          | 1.34                                     | 1.73 | 4.15 | –    | 0.92 | –    | 0.84 |      |
| May               | 1.47                 | –     | 1.68                 | –                  | 1.64  | –                          | 1.85  | –                          | 1.67                                     | 2.25 | 2.54 | –    | 1.13 | –    | 1.07 |      |
| June              | 1.83                 | –     | 2.31                 | –                  | 2.37  | –                          | 2.57  | –                          | 2.20                                     | 2.17 | 3.21 | –    | 1.57 | –    | 1.44 |      |
| July              | 1.26                 | –     | 1.63                 | –                  | 1.99  | –                          | 2.25  | –                          | 1.46                                     | 2.48 | 7.27 | –    | 1.07 | –    | 0.99 |      |
| Aug.              | 1.81                 | –     | 2.16                 | –                  | 1.96  | –                          | –     | –                          | 2.14                                     | 2.61 | 3.08 | –    | 1.44 | –    | 1.41 |      |
| Sep.              | 2.27                 | –     | 2.50                 | –                  | 2.38  | –                          | 2.36  | –                          | 2.67                                     | 3.37 | 3.67 | –    | 1.73 | –    | 1.70 |      |
| Oct.              | 2.28                 | –     | 2.94                 | –                  | 3.10  | –                          | 2.90  | –                          | 2.79                                     | 3.46 | 4.07 | –    | 2.13 | –    | 2.07 |      |
| Nov.              | 2.71                 | –     | 3.17                 | –                  | 3.12  | –                          | –     | –                          | 2.79                                     | 3.94 | 4.39 | –    | 2.11 | –    | 2.05 |      |
| Dec.              | 2.46                 | –     | 3.38                 | –                  | 2.86  | –                          | 3.22  | –                          | 3.04                                     | 3.61 | 6.11 | –    | 2.13 | –    | 1.96 |      |
| 2023 Jan.         | 2.69                 | –     | 2.88                 | –                  | 2.90  | –                          | 2.99  | –                          | 2.84                                     | 3.16 | 3.82 | –    | 2.32 | –    | 2.23 |      |
| Feb.              | 2.86                 | –     | 3.33                 | –                  | 3.08  | –                          | 3.07  | –                          | 3.16                                     | 4.09 | 3.94 | –    | 2.67 | –    | 2.55 |      |
| Mar.              | 2.78                 | –     | 3.13                 | –                  | 3.38  | –                          | –     | –                          | 3.06                                     | 3.88 | 4.47 | –    | 2.53 | –    | 2.43 |      |
| Apr.              | 2.89                 | –     | 3.06                 | –                  | 3.14  | –                          | 3.11  | –                          | 2.95                                     | 3.84 | 5.68 | –    | 2.47 | –    | 2.41 |      |
| May               | 2.80                 | –     | 3.16                 | –                  | 3.12  | –                          | –     | –                          | 2.95                                     | 4.30 | 4.78 | –    | 2.41 | –    | 2.37 |      |
| June              | 2.89                 | –     | 3.31                 | –                  | 3.27  | –                          | 3.28  | –                          | 3.26                                     | 3.90 | 4.20 | –    | 2.55 | –    | 2.46 |      |
| July              | 2.98                 | –     | 3.64                 | –                  | 3.48  | –                          | 3.34  | –                          | 3.35                                     | 4.53 | 5.11 | –    | 2.61 | –    | 2.55 |      |
| Aug.              | 2.92                 | –     | 3.42                 | –                  | 3.46  | –                          | 3.44  | –                          | 3.33                                     | 4.12 | 4.07 | –    | 2.58 | –    | 2.53 |      |
| Sep.              | 3.18                 | –     | 3.57                 | –                  | 3.61  | –                          | 0.00  | –                          | 3.48                                     | 4.10 | 4.50 | –    | 2.75 | –    | 2.72 |      |

<sup>1</sup> Sectoral reclassification of debt securities.

## I. Yields

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

% per annum

| Period                 | Total <sup>1</sup> | Bank debt securities |                      |                    |   |                            | Corporate bonds (non-MFIs) |
|------------------------|--------------------|----------------------|----------------------|--------------------|---|----------------------------|----------------------------|
|                        |                    | Total                | Mortgage Pfandbriefe | Public Pfandbriefe | Debt securities issued by special purpose credit institutions | Other bank debt securities |                            |
| 2012                   | 1.38               | 1.58                 | 1.43                 | 1.54               | 1.35  | 2.35                       | 3.73                       |
| 2013                   | 1.35               | 1.27                 | 1.26                 | 1.21               | 1.06  | 1.86                       | 3.37                       |
| 2014                   | 1.03               | 0.89                 | 0.85                 | 0.89               | 0.68  | 1.43                       | 2.95                       |
| 2015                   | 0.46               | 0.49                 | 0.40                 | 0.38               | 0.17  | 1.18                       | 2.43                       |
| 2016 <sup>2</sup>      | 0.11               | 0.28                 | 0.15                 | 0.16               | –   | 0.08                       | 2.07                       |
| 2017 <sup>2</sup>      | 0.28               | 0.43                 | 0.28                 | 0.35               | 0.23  | 1.16                       | 1.73                       |
| 2018                   | 0.43               | 0.60                 | 0.43                 | 0.54               | 0.41  | 1.33                       | 2.49                       |
| 2019                   | –                  | 0.05                 | 0.12                 | 0.01               | 0.08  | 0.08                       | 2.53                       |
| 2020 <sup>3</sup>      | –                  | 0.19                 | –                    | 0.04               | –   | 0.26                       | 1.75                       |
| 2021                   | –                  | 0.12                 | –                    | 0.06               | –   | 0.20                       | 0.90                       |
| 2022                   | 1.54               | 1.87                 | 1.77                 | 1.80               | 1.65  | 2.73                       | 3.26                       |
| 2021 Oct.              | 0.01               | 0.09                 | 0.00                 | 0.03               | –   | 0.04                       | 1.00                       |
| Nov.                   | 0.07               | 0.07                 | –                    | 0.01               | –   | 0.07                       | 0.97                       |
| Dec.                   | –                  | 0.10                 | –                    | 0.03               | –   | 0.09                       | 0.98                       |
| 2022 Jan.              | 0.10               | 0.24                 | 0.16                 | 0.19               | 0.10  | 0.78                       | 1.16                       |
| Feb.                   | 0.43               | 0.65                 | 0.57                 | 0.59               | 0.48  | 1.25                       | 1.70                       |
| Mar.                   | 0.60               | 0.85                 | 0.79                 | 0.82               | 0.64  | 1.55                       | 2.07                       |
| Apr.                   | 1.08               | 1.35                 | 1.29                 | 1.33               | 1.16  | 2.00                       | 2.49                       |
| May                    | 1.31               | 1.57                 | 1.49                 | 1.53               | 1.36  | 2.38                       | 3.02                       |
| June                   | 1.86               | 2.15                 | 2.03                 | 2.05               | 1.94  | 3.03                       | 3.81                       |
| July                   | 1.54               | 1.87                 | 1.76                 | 1.78               | 1.64  | 2.83                       | 3.73                       |
| Aug.                   | 1.48               | 1.89                 | 1.80                 | 1.83               | 1.65  | 2.82                       | 3.35                       |
| Sep.                   | 2.26               | 2.71                 | 2.62                 | 2.65               | 2.44  | 3.78                       | 4.30                       |
| Oct.                   | 2.69               | 3.16                 | 3.06                 | 3.09               | 2.88  | 4.31                       | 4.88                       |
| Nov.                   | 2.56               | 2.98                 | 2.86                 | 2.87               | 2.73  | 4.10                       | 4.41                       |
| Dec.                   | 2.53               | 2.98                 | 2.87                 | 2.87               | 2.77  | 3.98                       | 4.18                       |
| 2023 Jan.              | 2.65               | 3.06                 | 2.95                 | 2.94               | 2.86  | 4.01                       | 4.15                       |
| Feb.                   | 2.82               | 3.21                 | 3.13                 | 3.12               | 3.03  | 4.05                       | 4.15                       |
| Mar.                   | 2.89               | 3.33                 | 3.22                 | 3.23               | 3.11  | 4.40                       | 4.39                       |
| Apr.                   | 2.84               | 3.29                 | 3.19                 | 3.19               | 3.06  | 4.44                       | 4.19                       |
| May                    | 2.82               | 3.26                 | 3.15                 | 3.17               | 3.04  | 4.36                       | 4.17                       |
| June                   | 2.88               | 3.32                 | 3.24                 | 3.25               | 3.11  | 4.40                       | 4.24                       |
| July                   | 2.97               | 3.43                 | 3.37                 | 3.38               | 3.23  | 4.46                       | 4.25                       |
| Aug.                   | 3.01               | 3.44                 | 3.37                 | 3.38               | 3.25  | 4.43                       | 4.27                       |
| Sep.                   | 3.11               | 3.51                 | 3.45                 | 3.46               | 3.33  | 4.45                       | 4.39                       |
| Oct.                   | 3.25               | 3.66                 | 3.58                 | 3.60               | 3.48  | 4.60                       | 4.56                       |
| 2023 Oct. <sup>9</sup> | 3.24               | 3.66                 | 3.57                 | 3.59               | 3.49  | 4.61                       | 4.56                       |
| 10                     | 3.19               | 3.61                 | 3.53                 | 3.55               | 3.44  | 4.55                       | 4.51                       |
| 11                     | 3.14               | 3.57                 | 3.49                 | 3.50               | 3.40  | 4.51                       | 4.47                       |
| 12                     | 3.16               | 3.59                 | 3.51                 | 3.53               | 3.41  | 4.52                       | 4.45                       |
| 13                     | 3.17               | 3.59                 | 3.52                 | 3.53               | 3.42  | 4.53                       | 4.47                       |
| 16                     | 3.20               | 3.63                 | 3.56                 | 3.57               | 3.45  | 4.57                       | 4.50                       |
| 17                     | 3.23               | 3.65                 | 3.58                 | 3.60               | 3.48  | 4.60                       | 4.53                       |
| 18                     | 3.31               | 3.71                 | 3.64                 | 3.66               | 3.53  | 4.66                       | 4.61                       |
| 19                     | 3.35               | 3.75                 | 3.68                 | 3.70               | 3.57  | 4.71                       | 4.67                       |
| 20                     | 3.33               | 3.74                 | 3.67                 | 3.69               | 3.56  | 4.70                       | 4.69                       |
| 23                     | 3.34               | 3.74                 | 3.67                 | 3.70               | 3.56  | 4.70                       | 4.68                       |
| 24                     | 3.22               | 3.65                 | 3.57                 | 3.60               | 3.47  | 4.61                       | 4.61                       |
| 25                     | 3.25               | 3.65                 | 3.58                 | 3.62               | 3.47  | 4.61                       | 4.58                       |
| 26                     | 3.28               | 3.68                 | 3.61                 | 3.64               | 3.50  | 4.65                       | 4.63                       |
| 27                     | 3.22               | 3.61                 | 3.53                 | 3.56               | 3.43  | 4.58                       | 4.58                       |
| 30                     | 3.19               | 3.58                 | 3.50                 | 3.54               | 3.40  | 4.54                       | 4.53                       |
| 31                     | 3.17               | 3.55                 | 3.48                 | 3.51               | 3.37  | 4.51                       | 4.50                       |
| Nov. 1                 | 3.19               | 3.55                 | 3.49                 | 3.52               | 3.37  | 4.51                       | 4.50                       |
| 2                      | 3.09               | 3.44                 | 3.38                 | 3.40               | 3.26  | 4.40                       | 4.36                       |
| 3                      | 3.10               | 3.46                 | 3.41                 | 3.43               | 3.28  | 4.41                       | 4.34                       |
| 6                      | 3.08               | 3.44                 | 3.38                 | 3.41               | 3.26  | 4.38                       | 4.30                       |

<sup>1</sup> Yields for comparable categories of residual maturity, see Table I. 2b <sup>2</sup> Sectoral reclassification of debt securities. <sup>3</sup> Adjustment of the scope of securities included on 1 May 2020.

## I. Yields

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

% p.a.

| Monthly average or trading day | Public debt securities |  |                               |   |       |       |                                  |      |        |  |         |  |
|--------------------------------|------------------------|--|-------------------------------|---|-------|-------|----------------------------------|------|--------|--|---------|--|
|                                | Total                  | of which: Listed Federal securities <sup>1</sup> |                               |   |       |       |                                  |      |        |  |         |  |
|                                |                        | All public debt securities                       | All listed Federal securities | of which: With residual maturities of more than...but not more than...years |       |       |                                  |      | 8 - 15 |  | 15 - 30 |  |
|                                |                        |  |                               | 3 - 5   | 5 - 8 | Total | of which:<br>9 - 10 <sup>2</sup> |      |        |  |         |  |
| 2012                           | 1.38                   | 1.29   | 1.27                          | 0.36  | 0.93  | 1.47  | 1.50                             | 2.25 |        |  |         |  |
| 2013                           | 1.35                   | 1.33   | 1.33                          | 0.41  | 0.94  | 1.63  | 1.57                             | 2.37 |        |  |         |  |
| 2014                           | 1.03                   | 1.03   | 1.02                          | 0.22  | 0.64  | 1.24  | 1.16                             | 2.01 |        |  |         |  |
| 2015                           | 0.46                   | 0.42   | 0.41                          | 0.12  | 0.13  | 0.52  | 0.50                             | 1.07 |        |  |         |  |
| 2016                           | 0.11                   | 0.02   | 0.00                          | 0.51  | 0.28  | 0.13  | 0.09                             | 0.65 |        |  |         |  |
| 2017                           | 0.28                   | 0.18   | 0.17                          | 0.51  | 0.14  | 0.35  | 0.32                             | 0.97 |        |  |         |  |
| 2018                           | 0.43                   | 0.33   | 0.29                          | 0.32  | 0.04  | 0.40  | 0.40                             | 0.95 |        |  |         |  |
| 2019                           | -                      | 0.05   | -                             | 0.19  | -     | 0.27  | -                                | 0.21 |        |  |         |  |
| 2020                           | -                      | 0.19   | -                             | 0.40  | -     | 0.49  | -                                | 0.18 |        |  |         |  |
| 2021                           | -                      | 0.12   | -                             | 0.29  | -     | 0.34  | -                                | 0.01 |        |  |         |  |
| 2022                           | 1.54                   | 1.21   | 1.08                          | 0.87  | 1.00  | 1.17  | 1.14                             | 1.28 |        |  |         |  |
| 2021 Oct.                      | 0.01                   | 0.15   | -                             | 0.25  | -     | 0.41  | -                                | 0.10 |        |  |         |  |
| Nov.                           | -                      | 0.07   | -                             | 0.36  | -     | 0.50  | -                                | 0.09 |        |  |         |  |
| Dec.                           | -                      | 0.10   | -                             | 0.41  | -     | 0.54  | -                                | 0.16 |        |  |         |  |
| 2022 Jan.                      | 0.10                   | 0.08   | -                             | 0.19  | -     | 0.32  | -                                | 0.10 |        |  |         |  |
| Feb.                           | 0.43                   | 0.20   | -                             | 0.07  | -     | 0.01  | -                                | 0.29 |        |  |         |  |
| Mar.                           | 0.60                   | 0.32   | -                             | 0.18  | -     | 0.10  | -                                | 0.40 |        |  |         |  |
| Apr.                           | 1.08                   | 0.80   | -                             | 0.67  | -     | 0.60  | -                                | 0.84 |        |  |         |  |
| May                            | 1.31                   | 1.00   | -                             | 0.86  | -     | 0.76  | -                                | 1.11 |        |  |         |  |
| June                           | 1.86                   | 1.52   | -                             | 1.39  | -     | 1.29  | -                                | 1.65 |        |  |         |  |
| July                           | 1.54                   | 1.17   | -                             | 1.02  | -     | 0.88  | -                                | 1.40 |        |  |         |  |
| Aug.                           | 1.48                   | 1.13   | -                             | 0.97  | -     | 0.86  | -                                | 1.26 |        |  |         |  |
| Sep.                           | 2.26                   | 1.87   | -                             | 1.72  | -     | 1.68  | -                                | 1.85 |        |  |         |  |
| Oct.                           | 2.69                   | 2.28   | -                             | 2.12  | -     | 2.05  | -                                | 2.31 |        |  |         |  |
| Nov.                           | 2.56                   | 2.18   | -                             | 2.05  | -     | 2.01  | -                                | 2.12 |        |  |         |  |
| Dec.                           | 2.53                   | 2.19   | -                             | 2.07  | -     | 2.06  | -                                | 2.02 |        |  |         |  |
| 2023 Jan.                      | 2.65                   | 2.34   | -                             | 2.23  | -     | 2.18  | -                                | 2.21 |        |  |         |  |
| Feb.                           | 2.82                   | 2.52   | -                             | 2.41  | -     | 2.36  | -                                | 2.39 |        |  |         |  |
| Mar.                           | 2.89                   | 2.55   | -                             | 2.43  | -     | 2.38  | -                                | 2.42 |        |  |         |  |
| Apr.                           | 2.84                   | 2.53   | -                             | 2.40  | -     | 2.34  | -                                | 2.45 |        |  |         |  |
| May                            | 2.82                   | 2.50   | -                             | 2.37  | -     | 2.28  | -                                | 2.51 |        |  |         |  |
| June                           | 2.88                   | 2.58   | -                             | 2.46  | -     | 2.38  | -                                | 2.50 |        |  |         |  |
| July                           | 2.97                   | 2.67   | -                             | 2.55  | -     | 2.49  | -                                | 2.53 |        |  |         |  |
| Aug.                           | 3.01                   | 2.71   | -                             | 2.60  | -     | 2.51  | -                                | 2.67 |        |  |         |  |
| Sep.                           | 3.11                   | 2.82   | -                             | 2.71  | -     | 2.61  | -                                | 2.82 |        |  |         |  |
| Oct.                           | 3.25                   | 2.96   | -                             | 2.84  | -     | 2.72  | -                                | 3.06 |        |  |         |  |
| 2023 Oct. 9                    | 3.24                   | 2.94   | -                             | 2.82  | -     | 2.70  | -                                | 3.06 |        |  |         |  |
| 10                             | 3.19                   | 2.89   | -                             | 2.77  | -     | 2.65  | -                                | 3.01 |        |  |         |  |
| 11                             | 3.14                   | 2.84   | -                             | 2.72  | -     | 2.61  | -                                | 2.91 |        |  |         |  |
| 12                             | 3.16                   | 2.85   | -                             | 2.74  | -     | 2.63  | -                                | 2.91 |        |  |         |  |
| 13                             | 3.17                   | 2.87   | -                             | 2.75  | -     | 2.64  | -                                | 2.93 |        |  |         |  |
| 16                             | 3.20                   | 2.90   | -                             | 2.78  | -     | 2.67  | -                                | 2.98 |        |  |         |  |
| 17                             | 3.23                   | 2.93   | -                             | 2.81  | -     | 2.69  | -                                | 3.00 |        |  |         |  |
| 18                             | 3.31                   | 3.02   | -                             | 2.91  | -     | 2.79  | -                                | 3.09 |        |  |         |  |
| 19                             | 3.35                   | 3.05   | -                             | 2.94  | -     | 2.83  | -                                | 3.12 |        |  |         |  |
| 20                             | 3.33                   | 3.02   | -                             | 2.91  | -     | 2.79  | -                                | 3.11 |        |  |         |  |
| 23                             | 3.34                   | 3.04   | -                             | 2.93  | -     | 2.80  | -                                | 3.16 |        |  |         |  |
| 24                             | 3.22                   | 2.91   | -                             | 2.79  | -     | 2.67  | -                                | 2.99 |        |  |         |  |
| 25                             | 3.25                   | 2.95   | -                             | 2.84  | -     | 2.71  | -                                | 3.06 |        |  |         |  |
| 26                             | 3.28                   | 2.98   | -                             | 2.87  | -     | 2.74  | -                                | 3.11 |        |  |         |  |
| 27                             | 3.22                   | 2.93   | -                             | 2.81  | -     | 2.68  | -                                | 3.08 |        |  |         |  |
| 30                             | 3.19                   | 2.90   | -                             | 2.79  | -     | 2.64  | -                                | 3.08 |        |  |         |  |
| 31                             | 3.17                   | 2.88   | -                             | 2.76  | -     | 2.63  | -                                | 3.03 |        |  |         |  |
| Nov. 1                         | 3.19                   | 2.92   | -                             | 2.81  | -     | 2.66  | -                                | 3.10 |        |  |         |  |
| 2                              | 3.09                   | 2.81   | -                             | 2.70  | -     | 2.56  | -                                | 2.99 |        |  |         |  |
| 3                              | 3.10                   | 2.83   | -                             | 2.72  | -     | 2.58  | -                                | 2.98 |        |  |         |  |
| 6                              | 3.08                   | 2.81   | -                             | 2.70  | -     | 2.56  | -                                | 2.95 |        |  |         |  |

<sup>1</sup> Bonds, 5-year notes, and Treasury notes issued by the Federal Government, its special funds and the Treuhand agency. The average residual maturities of securities included in the respective aggregates can be found in the time series database at

www.bundesbank.de > Interest rates and yields > Current yields of debt securities of domestic issuers > Current yields by residual maturity > Average residual maturities.  
<sup>2</sup> Calculated as unweighted averages, with daily structural adjustments.

## I. Yields

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

% per annum

| Period                        | Mean residual maturity of ... years |                            |                            |                            |                            |                            |                            |                            |                             |      |
|-------------------------------|-------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|------|
|                               | More than 1<br>and up to 2          | More than 2<br>and up to 3 | More than 3<br>and up to 4 | More than 4<br>and up to 5 | More than 5<br>and up to 6 | More than 6<br>and up to 7 | More than 7                |                            |                             |      |
|                               |                                     |                            |                            |                            |                            |                            | Total                      | of which                   |                             |      |
|                               |                                     |                            |                            |                            |                            |                            | More than 7<br>and up to 8 | More than 8<br>and up to 9 | More than 9<br>and up to 10 |      |
| <b>Debt securities, total</b> |                                     |                            |                            |                            |                            |                            |                            |                            |                             |      |
| 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                        | 0.7                        | 0.3                        | 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                        | 0.1                        | 0.0                        | 0.1                        | 0.1                        | 0.1                         | 0.0  |
| 2020                          | 1                                   | –                          | 0.4                        | 0.3                        | 0.2                        | 0.2                        | –                          | 0.2                        | –                           | 0.2  |
| 2021                          | –                                   | 0.5                        | 0.4                        | 0.3                        | 0.2                        | 0.3                        | 0.0                        | 0.2                        | 0.2                         | 0.2  |
| 2022                          | –                                   | 1.0                        | 1.3                        | 1.5                        | 1.5                        | 1.5                        | 1.5                        | 1.5                        | 1.4                         | 1.6  |
| 2021 Oct.                     | –                                   | 0.43                       | 0.34                       | 0.24                       | 0.10                       | 0.07                       | 0.11                       | 0.15                       | 0.06                        | 0.03 |
| Nov.                          | –                                   | 0.46                       | 0.37                       | 0.25                       | 0.12                       | 0.14                       | 0.17                       | 0.03                       | 0.10                        | 0.11 |
| Dec.                          | –                                   | 0.49                       | 0.36                       | 0.25                       | 0.14                       | 0.17                       | 0.20                       | 0.02                       | 0.11                        | 0.16 |
| 2022 Jan.                     | –                                   | 0.44                       | 0.24                       | 0.09                       | 0.04                       | 0.01                       | 0.05                       | 0.21                       | 0.06                        | 0.04 |
| Feb.                          | –                                   | 0.25                       | 0.08                       | 0.28                       | 0.44                       | 0.38                       | 0.40                       | 0.49                       | 0.43                        | 0.37 |
| Mar.                          | –                                   | 0.15                       | 0.20                       | 0.41                       | 0.60                       | 0.54                       | 0.56                       | 0.67                       | 0.62                        | 0.55 |
| Apr.                          | –                                   | 0.22                       | 0.69                       | 0.96                       | 1.11                       | 1.05                       | 1.12                       | 1.13                       | 1.02                        | 1.13 |
| May                           | –                                   | 0.44                       | 0.90                       | 1.17                       | 1.29                       | 1.27                       | 1.25                       | 1.37                       | 1.36                        | 1.24 |
| June                          | –                                   | 1.01                       | 1.53                       | 1.79                       | 1.85                       | 1.84                       | 1.81                       | 1.89                       | 1.90                        | 1.74 |
| July                          | –                                   | 0.82                       | 1.26                       | 1.42                       | 1.45                       | 1.47                       | 1.55                       | 1.61                       | 1.58                        | 1.43 |
| Aug.                          | –                                   | 1.00                       | 1.34                       | 1.44                       | 1.45                       | 1.44                       | 1.50                       | 1.51                       | 1.49                        | 1.37 |
| Sep.                          | –                                   | 1.88                       | 2.24                       | 2.34                       | 2.32                       | 2.30                       | 2.29                       | 2.19                       | 2.26                        | 2.14 |
| Oct.                          | –                                   | 2.42                       | 2.59                       | 2.82                       | 2.75                       | 2.74                       | 2.67                       | 2.63                       | 2.69                        | 2.57 |
| Nov.                          | –                                   | 2.58                       | 2.64                       | 2.78                       | 2.61                       | 2.62                       | 2.59                       | 2.46                       | 2.53                        | 2.44 |
| Dec.                          | –                                   | 2.66                       | 2.74                       | 2.80                       | 2.62                       | 2.60                       | 2.61                       | 2.40                       | 2.50                        | 2.44 |
| 2023 Jan.                     | –                                   | 2.98                       | 2.96                       | 2.95                       | 2.70                       | 2.74                       | 2.65                       | 2.53                       | 2.56                        | 2.59 |
| Feb.                          | –                                   | 3.16                       | 3.12                       | 3.12                       | 2.86                       | 2.87                       | 2.82                       | 2.69                       | 2.71                        | 2.73 |
| Mar.                          | –                                   | 3.25                       | 3.20                       | 3.24                       | 2.95                       | 2.93                       | 2.90                       | 2.74                       | 2.77                        | 2.75 |
| Apr.                          | –                                   | 3.25                       | 3.19                       | 3.14                       | 2.90                       | 2.87                       | 2.84                       | 2.73                       | 2.73                        | 2.70 |
| May                           | –                                   | 3.32                       | 3.13                       | 3.06                       | 2.83                       | 2.81                       | 2.80                       | 2.74                       | 2.69                        | 2.69 |
| June                          | –                                   | 3.58                       | 3.37                       | 3.22                       | 2.97                       | 2.92                       | 2.89                       | 2.75                       | 2.72                        | 2.75 |
| July                          | –                                   | 3.78                       | 3.52                       | 3.31                       | 3.07                       | 3.07                       | 2.99                       | 2.80                       | 2.83                        | 2.84 |
| Aug.                          | –                                   | 3.70                       | 3.41                       | 3.25                       | 3.05                       | 3.06                       | 2.99                       | 2.91                       | 2.88                        | 2.94 |
| Sep.                          | –                                   | 3.80                       | 3.50                       | 3.32                       | 3.15                       | 3.12                       | 3.07                       | 3.03                       | 2.97                        | 3.07 |
| Oct.                          | –                                   | 3.76                       | 3.55                       | 3.36                       | 3.26                       | 3.22                       | 3.21                       | 3.23                       | 3.12                        | 3.26 |
| 2023 Oct. 2                   | –                                   | 3.89                       | 3.58                       | 3.40                       | 3.27                       | 3.23                       | 3.23                       | 3.23                       | 3.13                        | 3.27 |
| 3                             | –                                   | 3.91                       | 3.60                       | 3.42                       | 3.28                       | 3.26                       | 3.25                       | 3.29                       | 3.17                        | 3.31 |
| 4                             | –                                   | 3.91                       | 3.62                       | 3.45                       | 3.33                       | 3.31                       | 3.32                       | 3.34                       | 3.23                        | 3.37 |
| 5                             | –                                   | 3.90                       | 3.53                       | 3.47                       | 3.30                       | 3.27                       | 3.29                       | 3.32                       | 3.20                        | 3.34 |
| 6                             | –                                   | 3.78                       | 3.56                       | 3.43                       | 3.25                       | 3.22                       | 3.24                       | 3.27                       | 3.16                        | 3.30 |
| 9                             | –                                   | 3.76                       | 3.52                       | 3.40                       | 3.21                       | 3.18                       | 3.20                       | 3.23                       | 3.11                        | 3.26 |
| 10                            | –                                   | 3.75                       | 3.48                       | 3.36                       | 3.17                       | 3.12                       | 3.15                       | 3.18                       | 3.06                        | 3.21 |
| 11                            | –                                   | 3.74                       | 3.48                       | 3.34                       | 3.14                       | 3.09                       | 3.11                       | 3.11                       | 3.01                        | 3.15 |
| 12                            | –                                   | 3.69                       | 3.50                       | 3.28                       | 3.23                       | 3.11                       | 3.12                       | 3.11                       | 3.02                        | 3.15 |
| 13                            | –                                   | 3.70                       | 3.52                       | 3.29                       | 3.24                       | 3.12                       | 3.13                       | 3.13                       | 3.03                        | 3.16 |
| 16                            | –                                   | 3.72                       | 3.53                       | 3.32                       | 3.26                       | 3.15                       | 3.17                       | 3.16                       | 3.06                        | 3.20 |
| 17                            | –                                   | 3.74                       | 3.55                       | 3.34                       | 3.25                       | 3.22                       | 3.19                       | 3.19                       | 3.09                        | 3.22 |
| 18                            | –                                   | 3.79                       | 3.62                       | 3.41                       | 3.34                       | 3.31                       | 3.27                       | 3.27                       | 3.18                        | 3.31 |
| 19                            | –                                   | 3.80                       | 3.65                       | 3.45                       | 3.37                       | 3.35                       | 3.31                       | 3.31                       | 3.21                        | 3.35 |
| 20                            | –                                   | 3.78                       | 3.63                       | 3.42                       | 3.34                       | 3.32                       | 3.29                       | 3.30                       | 3.19                        | 3.34 |
| 23                            | –                                   | 3.77                       | 3.61                       | 3.41                       | 3.34                       | 3.32                       | 3.30                       | 3.33                       | 3.21                        | 3.35 |
| 24                            | –                                   | 3.73                       | 3.55                       | 3.32                       | 3.24                       | 3.22                       | 3.18                       | 3.18                       | 3.08                        | 3.22 |
| 25                            | –                                   | 3.73                       | 3.55                       | 3.33                       | 3.26                       | 3.23                       | 3.21                       | 3.23                       | 3.12                        | 3.25 |
| 26                            | –                                   | 3.74                       | 3.57                       | 3.35                       | 3.28                       | 3.26                       | 3.23                       | 3.27                       | 3.15                        | 3.29 |
| 27                            | –                                   | 3.67                       | 3.50                       | 3.28                       | 3.21                       | 3.19                       | 3.17                       | 3.23                       | 3.09                        | 3.23 |
| 30                            | –                                   | 3.65                       | 3.47                       | 3.24                       | 3.17                       | 3.15                       | 3.14                       | 3.21                       | 3.06                        | 3.20 |
| 31                            | –                                   | 3.65                       | 3.46                       | 3.22                       | 3.15                       | 3.13                       | 3.11                       | 3.18                       | 3.04                        | 3.18 |

\* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included. 1 Adjustment of the scope of securities included on 1 May 2020.



## I. Yields

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

% per annum

| Period                      | Mean residual maturity of ... years |                            |                            |                            |                            |                            |                            |                            |                             |      |
|-----------------------------|-------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|------|
|                             | More than 1<br>and up to 2          | More than 2<br>and up to 3 | More than 3<br>and up to 4 | More than 4<br>and up to 5 | More than 5<br>and up to 6 | More than 6<br>and up to 7 | More than 7                |                            |                             |      |
|                             |                                     |                            |                            |                            |                            |                            | Total                      | of which                   |                             |      |
|                             |                                     |                            |                            |                            |                            |                            | More than 7<br>and up to 8 | More than 8<br>and up to 9 | More than 9<br>and up to 10 |      |
| <b>Bank debt securities</b> |                                     |                            |                            |                            |                            |                            |                            |                            |                             |      |
| 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                        | –                          | 0.0                        | 0.1                        | 0.2                        | 0.3                        | 0.8                        | 0.4                         | 1.0  |
| 2017                        | –                                   | 0.3                        | –                          | 0.0                        | 0.2                        | 0.3                        | 0.4                        | 0.9                        | 0.7                         | 0.9  |
| 2018                        | –                                   | 0.2                        | –                          | 0.0                        | 0.2                        | 0.4                        | 0.7                        | 1.0                        | 0.9                         | 1.0  |
| 2019                        | –                                   | 0.2                        | –                          | 0.1                        | –                          | 0.1                        | 0.3                        | 0.4                        | 0.3                         | 0.3  |
| 2020                        | 1                                   | –                          | 0.2                        | –                          | 0.2                        | –                          | 0.1                        | –                          | 0.0                         | 0.1  |
| 2021                        | –                                   | 0.5                        | –                          | 0.4                        | –                          | 0.1                        | 0.1                        | –                          | 0.0                         | 0.2  |
| 2022                        | –                                   | 1.2                        | –                          | 1.5                        | –                          | 1.9                        | 1.8                        | –                          | 1.9                         | 1.9  |
| 2021 Oct.                   | –                                   | 0.42                       | –                          | 0.32                       | –                          | 0.19                       | –                          | 0.00                       | 0.03                        | 0.08 |
| Nov.                        | –                                   | 0.42                       | –                          | 0.29                       | –                          | 0.17                       | –                          | 0.00                       | 0.03                        | 0.03 |
| Dec.                        | –                                   | 0.42                       | –                          | 0.31                       | –                          | 0.18                       | –                          | 0.02                       | 0.01                        | 0.00 |
| 2022 Jan.                   | –                                   | 0.37                       | –                          | 0.19                       | –                          | 0.02                       | 0.16                       | 0.18                       | 0.22                        | 0.47 |
| Feb.                        | –                                   | 0.13                       | –                          | 0.20                       | –                          | 0.42                       | 0.62                       | 0.61                       | 0.59                        | 0.83 |
| Mar.                        | –                                   | 0.01                       | –                          | 0.34                       | –                          | 0.58                       | 0.81                       | 0.80                       | 0.77                        | 1.06 |
| Apr.                        | –                                   | 0.34                       | –                          | 0.81                       | –                          | 1.14                       | 1.30                       | 1.29                       | 1.27                        | 1.54 |
| May                         | –                                   | 0.55                       | –                          | 0.95                       | –                          | 1.35                       | 1.43                       | 1.58                       | 1.50                        | 1.80 |
| June                        | –                                   | 1.19                       | –                          | 1.59                       | –                          | 1.95                       | 2.04                       | 2.18                       | 2.09                        | 2.33 |
| July                        | –                                   | 1.06                       | –                          | 1.33                       | –                          | 1.65                       | 1.73                       | 1.85                       | 1.83                        | 2.10 |
| Aug.                        | –                                   | 1.29                       | –                          | 1.50                       | –                          | 1.77                       | 1.78                       | 1.89                       | 1.82                        | 2.04 |
| Sep.                        | –                                   | 2.24                       | –                          | 2.40                       | –                          | 2.75                       | 2.65                       | 2.73                       | 2.65                        | 2.73 |
| Oct.                        | –                                   | 2.62                       | –                          | 2.80                       | –                          | 3.16                       | 3.10                       | 3.19                       | 3.15                        | 3.19 |
| Nov.                        | –                                   | 2.76                       | –                          | 2.79                       | –                          | 3.03                       | 2.96                       | 2.97                       | 2.97                        | 2.96 |
| Dec.                        | –                                   | 2.93                       | –                          | 2.90                       | –                          | 3.07                       | 2.98                       | 2.98                       | 2.96                        | 2.94 |
| 2023 Jan.                   | –                                   | 3.15                       | –                          | 3.07                       | –                          | 3.17                       | 3.05                       | 3.04                       | 3.02                        | 3.03 |
| Feb.                        | –                                   | 3.31                       | –                          | 3.29                       | –                          | 3.33                       | 3.20                       | 3.16                       | 3.18                        | 3.18 |
| Mar.                        | –                                   | 3.43                       | –                          | 3.46                       | –                          | 3.49                       | 3.34                       | 3.26                       | 3.30                        | 3.27 |
| Apr.                        | –                                   | 3.46                       | –                          | 3.47                       | –                          | 3.44                       | 3.30                       | 3.21                       | 3.28                        | 3.24 |
| May                         | –                                   | 3.48                       | –                          | 3.46                       | –                          | 3.33                       | 3.30                       | 3.19                       | 3.21                        | 3.22 |
| June                        | –                                   | 3.69                       | –                          | 3.63                       | –                          | 3.47                       | 3.41                       | 3.27                       | 3.24                        | 3.23 |
| July                        | –                                   | 3.81                       | –                          | 3.78                       | –                          | 3.58                       | 3.53                       | 3.41                       | 3.34                        | 3.32 |
| Aug.                        | –                                   | 3.74                       | –                          | 3.71                       | –                          | 3.51                       | 3.50                       | 3.41                       | 3.37                        | 3.38 |
| Sep.                        | –                                   | 3.80                       | –                          | 3.79                       | –                          | 3.56                       | 3.56                       | 3.50                       | 3.42                        | 3.48 |
| Oct.                        | –                                   | 3.86                       | –                          | 3.81                       | –                          | 3.66                       | 3.66                       | 3.65                       | 3.57                        | 3.71 |
| 2023 Oct. 2                 | –                                   | 3.88                       | –                          | 3.84                       | –                          | 3.69                       | 3.69                       | 3.65                       | 3.57                        | 3.69 |
| 3                           | –                                   | 3.88                       | –                          | 3.86                       | –                          | 3.70                       | 3.70                       | 3.67                       | 3.58                        | 3.73 |
| 4                           | –                                   | 3.91                       | –                          | 3.89                       | –                          | 3.74                       | 3.76                       | 3.73                       | 3.67                        | 3.79 |
| 5                           | –                                   | 3.88                       | –                          | 3.85                       | –                          | 3.71                       | 3.72                       | 3.69                       | 3.63                        | 3.77 |
| 6                           | –                                   | 3.87                       | –                          | 3.83                       | –                          | 3.69                       | 3.68                       | 3.69                       | 3.61                        | 3.75 |
| 9                           | –                                   | 3.85                       | –                          | 3.80                       | –                          | 3.65                       | 3.65                       | 3.66                       | 3.57                        | 3.72 |
| 10                          | –                                   | 3.84                       | –                          | 3.76                       | –                          | 3.61                       | 3.61                       | 3.61                       | 3.52                        | 3.67 |
| 11                          | –                                   | 3.82                       | –                          | 3.75                       | –                          | 3.58                       | 3.57                       | 3.57                       | 3.48                        | 3.61 |
| 12                          | –                                   | 3.85                       | –                          | 3.77                       | –                          | 3.62                       | 3.60                       | 3.59                       | 3.49                        | 3.60 |
| 13                          | –                                   | 3.86                       | –                          | 3.80                       | –                          | 3.63                       | 3.61                       | 3.59                       | 3.50                        | 3.61 |
| 16                          | –                                   | 3.86                       | –                          | 3.81                       | –                          | 3.65                       | 3.63                       | 3.63                       | 3.54                        | 3.65 |
| 17                          | –                                   | 3.88                       | –                          | 3.83                       | –                          | 3.67                       | 3.65                       | 3.65                       | 3.56                        | 3.68 |
| 18                          | –                                   | 3.91                       | –                          | 3.89                       | –                          | 3.72                       | 3.72                       | 3.71                       | 3.62                        | 3.73 |
| 19                          | –                                   | 3.93                       | –                          | 3.92                       | –                          | 3.76                       | 3.76                       | 3.75                       | 3.66                        | 3.78 |
| 20                          | –                                   | 3.91                       | –                          | 3.90                       | –                          | 3.74                       | 3.74                       | 3.74                       | 3.65                        | 3.79 |
| 23                          | –                                   | 3.89                       | –                          | 3.87                       | –                          | 3.72                       | 3.73                       | 3.74                       | 3.66                        | 3.80 |
| 24                          | –                                   | 3.86                       | –                          | 3.81                       | –                          | 3.65                       | 3.65                       | 3.64                       | 3.56                        | 3.69 |
| 25                          | –                                   | 3.87                       | –                          | 3.79                       | –                          | 3.65                       | 3.64                       | 3.65                       | 3.57                        | 3.71 |
| 26                          | –                                   | 3.85                       | –                          | 3.81                       | –                          | 3.66                       | 3.67                       | 3.68                       | 3.60                        | 3.75 |
| 27                          | –                                   | 3.79                       | –                          | 3.72                       | –                          | 3.57                       | 3.58                       | 3.61                       | 3.52                        | 3.69 |
| 30                          | –                                   | 3.77                       | –                          | 3.70                       | –                          | 3.54                       | 3.55                       | 3.58                       | 3.50                        | 3.68 |
| 31                          | –                                   | 3.76                       | –                          | 3.67                       | –                          | 3.52                       | 3.52                       | 3.54                       | 3.46                        | 3.64 |

\* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included. 1 Adjustment of the scope of securities included on 1 May 2020.

## I. Yields

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

% per annum

| Period                      | Mean residual maturity of ... years |                            |                            |                            |                            |                            |                            |                            |                             |      |
|-----------------------------|-------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|------|
|                             | More than 1<br>and up to 2          | More than 2<br>and up to 3 | More than 3<br>and up to 4 | More than 4<br>and up to 5 | More than 5<br>and up to 6 | More than 6<br>and up to 7 | More than 7                |                            |                             |      |
|                             |                                     |                            |                            |                            |                            |                            | Total                      | of which                   |                             |      |
|                             |                                     |                            |                            |                            |                            |                            | More than 7<br>and up to 8 | More than 8<br>and up to 9 | More than 9<br>and up to 10 |      |
| <b>Mortgage Pfandbriefe</b> |                                     |                            |                            |                            |                            |                            |                            |                            |                             |      |
| 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                        | -                          | 0.0                        | 0.1                        | 0.3                        | 0.3                         | 0.4  |
| 2017                        | -                                   | 0.2                        | -                          | 0.2                        | -                          | 0.1                        | 0.2                        | 0.4                        | 0.6                         | 0.7  |
| 2018                        | -                                   | 0.3                        | -                          | 0.1                        | -                          | 0.2                        | 0.4                        | 0.7                        | 0.7                         | 0.9  |
| 2019                        | -                                   | 0.3                        | -                          | 0.3                        | -                          | 0.1                        | -                          | 0.1                        | 0.2                         | 0.3  |
| 2020                        | 1                                   | 0.3                        | -                          | 0.3                        | -                          | 0.2                        | -                          | 0.2                        | -                           | 0.1  |
| 2021                        | -                                   | 0.5                        | -                          | 0.4                        | -                          | 0.2                        | -                          | 0.1                        | -                           | 0.0  |
| 2022                        | -                                   | 1.3                        | -                          | 1.4                        | -                          | 1.7                        | -                          | 1.9                        | -                           | 1.9  |
| 2021 Oct.                   | -                                   | 0.41                       | -                          | 0.30                       | -                          | 0.13                       | -                          | 0.00                       | 0.24                        | 0.09 |
| Nov.                        | -                                   | 0.38                       | -                          | 0.28                       | -                          | 0.11                       | -                          | 0.08                       | 0.18                        | 0.05 |
| Dec.                        | -                                   | 0.37                       | -                          | 0.29                       | -                          | 0.12                       | -                          | 0.09                       | 0.15                        | 0.03 |
| 2022 Jan.                   | -                                   | 0.33                       | -                          | 0.17                       | -                          | 0.03                       | -                          | 0.10                       | 0.37                        | 0.24 |
| Feb.                        | -                                   | 0.06                       | -                          | 0.23                       | -                          | 0.38                       | -                          | 0.48                       | 0.60                        | 0.67 |
| Mar.                        | -                                   | 0.09                       | -                          | 0.39                       | -                          | 0.53                       | -                          | 0.66                       | 0.74                        | 0.83 |
| Apr.                        | -                                   | 0.44                       | -                          | 0.85                       | -                          | 1.01                       | -                          | 1.19                       | 1.26                        | 1.34 |
| May                         | -                                   | 0.68                       | -                          | 1.01                       | -                          | 1.16                       | -                          | 1.36                       | 1.46                        | 1.56 |
| June                        | -                                   | 1.28                       | -                          | 1.60                       | -                          | 1.70                       | -                          | 1.92                       | 2.00                        | 2.10 |
| July                        | -                                   | 1.17                       | -                          | 1.28                       | -                          | 1.44                       | -                          | 1.60                       | 1.71                        | 1.83 |
| Aug.                        | -                                   | 1.42                       | -                          | 1.47                       | -                          | 1.56                       | -                          | 1.71                       | 1.77                        | 1.85 |
| Sep.                        | -                                   | 2.35                       | -                          | 2.34                       | -                          | 2.46                       | -                          | 2.59                       | 2.60                        | 2.66 |
| Oct.                        | -                                   | 2.73                       | -                          | 2.72                       | -                          | 2.91                       | -                          | 3.01                       | 3.04                        | 3.11 |
| Nov.                        | -                                   | 2.81                       | -                          | 2.70                       | -                          | 2.81                       | -                          | 2.85                       | 2.84                        | 2.88 |
| Dec.                        | -                                   | 2.97                       | -                          | 2.81                       | -                          | 2.88                       | -                          | 2.88                       | 2.86                        | 2.87 |
| 2023 Jan.                   | -                                   | 3.20                       | -                          | 2.98                       | -                          | 2.99                       | -                          | 2.97                       | 2.94                        | 2.92 |
| Feb.                        | -                                   | 3.37                       | -                          | 3.16                       | -                          | 3.19                       | -                          | 3.15                       | 3.11                        | 3.09 |
| Mar.                        | -                                   | 3.48                       | -                          | 3.23                       | -                          | 3.31                       | -                          | 3.23                       | 3.22                        | 3.19 |
| Apr.                        | -                                   | 3.54                       | -                          | 3.17                       | -                          | 3.27                       | -                          | 3.17                       | 3.17                        | 3.15 |
| May                         | -                                   | 3.62                       | -                          | 3.19                       | -                          | 3.21                       | -                          | 3.13                       | 3.13                        | 3.13 |
| June                        | -                                   | 3.78                       | -                          | 3.40                       | -                          | 3.39                       | -                          | 3.26                       | 3.21                        | 3.19 |
| July                        | -                                   | 3.75                       | -                          | 3.70                       | -                          | 3.53                       | -                          | 3.40                       | 3.34                        | 3.31 |
| Aug.                        | -                                   | 3.67                       | -                          | 3.61                       | -                          | 3.47                       | -                          | 3.37                       | 3.35                        | 3.34 |
| Sep.                        | -                                   | 3.71                       | -                          | 3.65                       | -                          | 3.52                       | -                          | 3.43                       | 3.42                        | 3.41 |
| Oct.                        | -                                   | 3.73                       | -                          | 3.69                       | -                          | 3.59                       | -                          | 3.56                       | 3.56                        | 3.56 |
| 2023 Oct. 2                 | -                                   | 3.75                       | -                          | 3.74                       | -                          | 3.63                       | -                          | 3.56                       | 3.57                        | 3.57 |
| 3                           | -                                   | 3.77                       | -                          | 3.76                       | -                          | 3.66                       | -                          | 3.60                       | 3.62                        | 3.61 |
| 4                           | -                                   | 3.77                       | -                          | 3.77                       | -                          | 3.68                       | -                          | 3.63                       | 3.65                        | 3.67 |
| 5                           | -                                   | 3.74                       | -                          | 3.73                       | -                          | 3.64                       | -                          | 3.59                       | 3.61                        | 3.63 |
| 6                           | -                                   | 3.73                       | -                          | 3.71                       | -                          | 3.62                       | -                          | 3.55                       | 3.58                        | 3.58 |
| 9                           | -                                   | 3.71                       | -                          | 3.68                       | -                          | 3.57                       | -                          | 3.54                       | 3.55                        | 3.55 |
| 10                          | -                                   | 3.70                       | -                          | 3.65                       | -                          | 3.53                       | -                          | 3.50                       | 3.50                        | 3.49 |
| 11                          | -                                   | 3.70                       | -                          | 3.63                       | -                          | 3.51                       | -                          | 3.47                       | 3.47                        | 3.47 |
| 12                          | -                                   | 3.72                       | -                          | 3.66                       | -                          | 3.54                       | -                          | 3.50                       | 3.49                        | 3.47 |
| 13                          | -                                   | 3.73                       | -                          | 3.68                       | -                          | 3.55                       | -                          | 3.51                       | 3.50                        | 3.49 |
| 16                          | -                                   | 3.74                       | -                          | 3.70                       | -                          | 3.58                       | -                          | 3.55                       | 3.53                        | 3.54 |
| 17                          | -                                   | 3.75                       | -                          | 3.72                       | -                          | 3.60                       | -                          | 3.57                       | 3.55                        | 3.54 |
| 18                          | -                                   | 3.78                       | -                          | 3.77                       | -                          | 3.66                       | -                          | 3.63                       | 3.62                        | 3.61 |
| 19                          | -                                   | 3.80                       | -                          | 3.79                       | -                          | 3.69                       | -                          | 3.67                       | 3.66                        | 3.65 |
| 20                          | -                                   | 3.78                       | -                          | 3.76                       | -                          | 3.66                       | -                          | 3.65                       | 3.64                        | 3.64 |
| 23                          | -                                   | 3.76                       | -                          | 3.75                       | -                          | 3.65                       | -                          | 3.65                       | 3.65                        | 3.65 |
| 24                          | -                                   | 3.73                       | -                          | 3.68                       | -                          | 3.58                       | -                          | 3.55                       | 3.55                        | 3.54 |
| 25                          | -                                   | 3.74                       | -                          | 3.67                       | -                          | 3.57                       | -                          | 3.55                       | 3.55                        | 3.55 |
| 26                          | -                                   | 3.75                       | -                          | 3.68                       | -                          | 3.58                       | -                          | 3.57                       | 3.57                        | 3.55 |
| 27                          | -                                   | 3.69                       | -                          | 3.59                       | -                          | 3.49                       | -                          | 3.48                       | 3.48                        | 3.48 |
| 30                          | -                                   | 3.65                       | -                          | 3.56                       | -                          | 3.46                       | -                          | 3.45                       | 3.45                        | 3.48 |
| 31                          | -                                   | 3.65                       | -                          | 3.55                       | -                          | 3.46                       | -                          | 3.44                       | 3.44                        | 3.46 |

\* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included. 1 Adjustment of the scope of securities included on 1 May 2020.

## I. Yields

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

% per annum

| Period                    | Mean residual maturity of ... years |                            |                            |                            |                            |                            |                            |                            |                             |      |      |      |      |      |      |
|---------------------------|-------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|------|------|------|------|------|------|
|                           | More than 1<br>and up to 2          | More than 2<br>and up to 3 | More than 3<br>and up to 4 | More than 4<br>and up to 5 | More than 5<br>and up to 6 | More than 6<br>and up to 7 | More than 7                |                            |                             |      |      |      |      |      |      |
|                           |                                     |                            |                            |                            |                            |                            | Total                      | of which                   |                             |      |      |      |      |      |      |
|                           |                                     |                            |                            |                            |                            |                            | More than 7<br>and up to 8 | More than 8<br>and up to 9 | More than 9<br>and up to 10 |      |      |      |      |      |      |
| <b>Public Pfandbriefe</b> |                                     |                            |                            |                            |                            |                            |                            |                            |                             |      |      |      |      |      |      |
| 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                        | -                          | 0.1                        | 0.4                        | 0.7                        | 0.5                         | 0.7  |      |      |      |      |      |
| 2018                      | -                                   | 0.2                        | -                          | 0.1                        | -                          | 0.2                        | 0.6                        | 0.9                        | 0.6                         | 0.9  |      |      |      |      |      |
| 2019                      | -                                   | 0.3                        | -                          | 0.2                        | -                          | 0.1                        | 0.0                        | 0.3                        | 0.1                         | 0.3  |      |      |      |      |      |
| 2020                      | 1                                   | -                          | 0.3                        | -                          | 0.3                        | -                          | 0.2                        | -                          | 0.2                         | -    | 0.1  |      |      |      |      |
| 2021                      | -                                   | 0.5                        | -                          | 0.4                        | -                          | 0.3                        | -                          | 0.2                        | -                           | 0.1  | 0.1  |      |      |      |      |
| 2022                      | -                                   | 1.3                        | -                          | 1.6                        | -                          | 1.7                        | -                          | 1.8                        | -                           | 1.9  | 2.0  |      |      |      |      |
| 2021 Oct.                 | -                                   | 0.43                       | -                          | 0.25                       | -                          | 0.11                       | -                          | 0.02                       | -                           | 0.30 | 0.11 | 0.13 | 0.25 |      |      |
| Nov.                      | -                                   | 0.42                       | -                          | 0.20                       | -                          | 0.11                       | -                          | 0.09                       | -                           | 0.06 | 0.06 | 0.09 | 0.20 |      |      |
| Dec.                      | -                                   | 0.42                       | -                          | 0.20                       | -                          | 0.12                       | -                          | 0.10                       | -                           | 0.03 | 0.03 | 0.06 | 0.17 |      |      |
| 2022 Jan.                 | -                                   | 0.36                       | -                          | 0.09                       | -                          | 0.03                       | -                          | 0.08                       | -                           | 0.17 | 0.41 | 0.25 | 0.31 | 0.39 |      |
| Feb.                      | -                                   | 0.13                       | -                          | 0.28                       | -                          | 0.44                       | -                          | 0.52                       | -                           | 0.60 | 0.78 | 0.66 | 0.74 | 0.77 |      |
| Mar.                      | -                                   | 0.00                       | -                          | 0.44                       | -                          | 0.59                       | -                          | 0.70                       | -                           | 0.81 | 1.05 | 0.88 | 0.94 | 1.01 |      |
| Apr.                      | -                                   | 0.41                       | -                          | 1.01                       | -                          | 1.07                       | -                          | 1.23                       | -                           | 1.27 | 1.33 | 1.54 | 1.38 | 1.45 | 1.52 |
| May                       | -                                   | 0.63                       | -                          | 1.18                       | -                          | 1.22                       | -                          | 1.38                       | -                           | 1.47 | 1.55 | 1.80 | 1.62 | 1.72 | 1.83 |
| June                      | -                                   | 1.17                       | -                          | 1.73                       | -                          | 1.78                       | -                          | 1.87                       | -                           | 2.03 | 2.09 | 2.31 | 2.15 | 2.25 | 2.37 |
| July                      | -                                   | 1.19                       | -                          | 1.45                       | -                          | 1.44                       | -                          | 1.63                       | -                           | 1.72 | 1.79 | 2.07 | 1.87 | 1.98 | 2.12 |
| Aug.                      | -                                   | 1.41                       | -                          | 1.66                       | -                          | 1.63                       | -                          | 1.70                       | -                           | 1.79 | 1.82 | 2.03 | 1.88 | 1.97 | 2.02 |
| Sep.                      | -                                   | 2.37                       | -                          | 2.61                       | -                          | 2.54                       | -                          | 2.59                       | -                           | 2.63 | 2.66 | 2.74 | 2.66 | 2.74 | 2.73 |
| Oct.                      | -                                   | 2.81                       | -                          | 2.94                       | -                          | 2.98                       | -                          | 2.99                       | -                           | 3.05 | 3.12 | 3.20 | 3.11 | 3.23 | 3.19 |
| Nov.                      | -                                   | 2.89                       | -                          | 2.90                       | -                          | 2.87                       | -                          | 2.81                       | -                           | 2.83 | 2.87 | 2.95 | 2.87 | 2.90 | 2.92 |
| Dec.                      | -                                   | 3.06                       | -                          | 3.05                       | -                          | 2.93                       | -                          | 2.85                       | -                           | 2.85 | 2.85 | 2.88 | 2.85 | 2.85 | 2.87 |
| 2023 Jan.                 | -                                   | 3.28                       | -                          | 3.16                       | -                          | 2.99                       | -                          | 2.91                       | -                           | 2.92 | 2.90 | 2.94 | 2.90 | 2.90 | 2.91 |
| Feb.                      | -                                   | 3.48                       | -                          | 3.32                       | -                          | 3.19                       | -                          | 3.11                       | -                           | 3.10 | 3.08 | 3.10 | 3.08 | 3.06 | 2.97 |
| Mar.                      | -                                   | 3.59                       | -                          | 3.38                       | -                          | 3.30                       | -                          | 3.24                       | -                           | 3.21 | 3.18 | 3.21 | 3.19 | 3.15 | 3.14 |
| Apr.                      | -                                   | 3.51                       | -                          | 3.31                       | -                          | 3.25                       | -                          | 3.18                       | -                           | 3.16 | 3.14 | 3.19 | 3.14 | 3.11 | 3.12 |
| May                       | -                                   | 3.65                       | -                          | 3.35                       | -                          | 3.21                       | -                          | 3.14                       | -                           | 3.12 | 3.10 | 3.18 | 3.12 | 3.10 | 3.09 |
| June                      | -                                   | 3.89                       | -                          | 3.58                       | -                          | 3.39                       | -                          | 3.26                       | -                           | 3.19 | 3.15 | 3.19 | 3.17 | 3.11 | 3.10 |
| July                      | -                                   | 4.02                       | -                          | 3.72                       | -                          | 3.53                       | -                          | 3.40                       | -                           | 3.33 | 3.28 | 3.29 | 3.29 | 3.21 | 3.24 |
| Aug.                      | -                                   | 3.91                       | -                          | 3.62                       | -                          | 3.45                       | -                          | 3.38                       | -                           | 3.34 | 3.30 | 3.37 | 3.36 | 3.25 | 3.32 |
| Sep.                      | -                                   | 3.95                       | -                          | 3.67                       | -                          | 3.51                       | -                          | 3.45                       | -                           | 3.44 | 3.37 | 3.47 | 3.38 | 3.36 | 3.41 |
| Oct.                      | -                                   | 3.95                       | -                          | 3.71                       | -                          | 3.59                       | -                          | 3.56                       | -                           | 3.58 | 3.54 | 3.69 | 3.56 | 3.56 | 3.65 |
| 2023 Oct. 2               | -                                   | 3.99                       | -                          | 3.75                       | -                          | 3.61                       | -                          | 3.57                       | -                           | 3.59 | 3.54 | 3.68 | 3.55 | 3.56 | 3.64 |
| 3                         | -                                   | 4.02                       | -                          | 3.77                       | -                          | 3.65                       | -                          | 3.61                       | -                           | 3.63 | 3.58 | 3.72 | 3.57 | 3.60 | 3.70 |
| 4                         | -                                   | 4.02                       | -                          | 3.79                       | -                          | 3.67                       | -                          | 3.64                       | -                           | 3.67 | 3.62 | 3.78 | 3.66 | 3.67 | 3.74 |
| 5                         | -                                   | 3.92                       | -                          | 3.74                       | -                          | 3.62                       | -                          | 3.60                       | -                           | 3.63 | 3.60 | 3.76 | 3.62 | 3.63 | 3.72 |
| 6                         | -                                   | 3.90                       | -                          | 3.72                       | -                          | 3.60                       | -                          | 3.57                       | -                           | 3.61 | 3.56 | 3.73 | 3.59 | 3.60 | 3.69 |
| 9                         | -                                   | 3.93                       | -                          | 3.69                       | -                          | 3.57                       | -                          | 3.54                       | -                           | 3.57 | 3.52 | 3.70 | 3.55 | 3.56 | 3.67 |
| 10                        | -                                   | 3.91                       | -                          | 3.65                       | -                          | 3.52                       | -                          | 3.49                       | -                           | 3.52 | 3.47 | 3.65 | 3.49 | 3.52 | 3.62 |
| 11                        | -                                   | 3.91                       | -                          | 3.64                       | -                          | 3.50                       | -                          | 3.46                       | -                           | 3.48 | 3.43 | 3.59 | 3.45 | 3.46 | 3.56 |
| 12                        | -                                   | 3.93                       | -                          | 3.68                       | -                          | 3.54                       | -                          | 3.49                       | -                           | 3.51 | 3.45 | 3.58 | 3.45 | 3.46 | 3.55 |
| 13                        | -                                   | 3.94                       | -                          | 3.69                       | -                          | 3.55                       | -                          | 3.50                       | -                           | 3.51 | 3.46 | 3.59 | 3.46 | 3.48 | 3.56 |
| 16                        | -                                   | 3.95                       | -                          | 3.70                       | -                          | 3.58                       | -                          | 3.53                       | -                           | 3.55 | 3.49 | 3.63 | 3.48 | 3.52 | 3.60 |
| 17                        | -                                   | 3.96                       | -                          | 3.73                       | -                          | 3.61                       | -                          | 3.56                       | -                           | 3.58 | 3.53 | 3.65 | 3.51 | 3.54 | 3.62 |
| 18                        | -                                   | 4.01                       | -                          | 3.79                       | -                          | 3.65                       | -                          | 3.63                       | -                           | 3.64 | 3.60 | 3.73 | 3.60 | 3.62 | 3.68 |
| 19                        | -                                   | 4.02                       | -                          | 3.82                       | -                          | 3.71                       | -                          | 3.67                       | -                           | 3.69 | 3.64 | 3.76 | 3.62 | 3.66 | 3.70 |
| 20                        | -                                   | 4.00                       | -                          | 3.79                       | -                          | 3.68                       | -                          | 3.64                       | -                           | 3.68 | 3.62 | 3.77 | 3.62 | 3.65 | 3.69 |
| 23                        | -                                   | 3.98                       | -                          | 3.77                       | -                          | 3.67                       | -                          | 3.64                       | -                           | 3.68 | 3.63 | 3.80 | 3.68 | 3.67 | 3.71 |
| 24                        | -                                   | 3.95                       | -                          | 3.72                       | -                          | 3.60                       | -                          | 3.55                       | -                           | 3.58 | 3.52 | 3.69 | 3.57 | 3.53 | 3.66 |
| 25                        | -                                   | 3.95                       | -                          | 3.71                       | -                          | 3.60                       | -                          | 3.56                       | -                           | 3.59 | 3.54 | 3.72 | 3.60 | 3.56 | 3.67 |
| 26                        | -                                   | 3.94                       | -                          | 3.70                       | -                          | 3.61                       | -                          | 3.57                       | -                           | 3.61 | 3.57 | 3.75 | 3.62 | 3.60 | 3.71 |
| 27                        | -                                   | 3.89                       | -                          | 3.62                       | -                          | 3.53                       | -                          | 3.49                       | -                           | 3.54 | 3.49 | 3.69 | 3.57 | 3.53 | 3.65 |
| 30                        | -                                   | 3.85                       | -                          | 3.58                       | -                          | 3.48                       | -                          | 3.47                       | -                           | 3.52 | 3.47 | 3.67 | 3.53 | 3.52 | 3.60 |
| 31                        | -                                   | 3.84                       | -                          | 3.56                       | -                          | 3.46                       | -                          | 3.44                       | -                           | 3.47 | 3.44 | 3.64 | 3.51 | 3.49 | 3.59 |

\* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included. 1 Adjustment of the scope of securities included on 1 May 2020.

## I. Yields

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

% per annum

| Period                        | Mean residual maturity of ... years |                            |                            |                            |                            |                            |                            |                            |                             |      |
|-------------------------------|-------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|------|
|                               | More than 1<br>and up to 2          | More than 2<br>and up to 3 | More than 3<br>and up to 4 | More than 4<br>and up to 5 | More than 5<br>and up to 6 | More than 6<br>and up to 7 | More than 7                |                            |                             |      |
|                               |                                     |                            |                            |                            |                            |                            | Total                      | of which                   |                             |      |
|                               |                                     |                            |                            |                            |                            |                            | More than 7<br>and up to 8 | More than 8<br>and up to 9 | More than 9<br>and up to 10 |      |
| <b>Public debt securities</b> |                                     |                            |                            |                            |                            |                            |                            |                            |                             |      |
| 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                        | -                          | 0.0                        | 0.1                        | 0.2                        | 0.7                         | 0.6  |
| 2016                          | -                                   | 0.6                        | -                          | 0.5                        | -                          | 0.4                        | -                          | 0.3                        | 0.3                         | 0.2  |
| 2017                          | -                                   | 0.7                        | -                          | 0.6                        | -                          | 0.4                        | -                          | 0.2                        | 0.0                         | 0.4  |
| 2018                          | -                                   | 0.6                        | -                          | 0.5                        | -                          | 0.3                        | -                          | 0.2                        | 0.7                         | 0.4  |
| 2019                          | -                                   | 0.6                        | -                          | 0.6                        | -                          | 0.5                        | -                          | 0.4                        | 0.0                         | 0.2  |
| 2020                          | 1                                   | 0.6                        | -                          | 0.6                        | -                          | 0.6                        | -                          | 0.5                        | -                           | 0.4  |
| 2021                          | -                                   | 0.7                        | -                          | 0.7                        | -                          | 0.6                        | -                          | 0.5                        | 0.1                         | 0.3  |
| 2022                          | -                                   | 0.7                        | -                          | 0.9                        | -                          | 1.0                        | -                          | 1.1                        | 1.3                         | 1.3  |
| 2021 Oct.                     | -                                   | 0.66                       | -                          | 0.63                       | -                          | 0.52                       | -                          | 0.38                       | 0.05                        | 0.16 |
| Nov.                          | -                                   | 0.72                       | -                          | 0.68                       | -                          | 0.56                       | -                          | 0.45                       | 0.09                        | 0.27 |
| Dec.                          | -                                   | 0.69                       | -                          | 0.67                       | -                          | 0.52                       | -                          | 0.47                       | 0.14                        | 0.33 |
| 2022 Jan.                     | -                                   | 0.62                       | -                          | 0.53                       | -                          | 0.41                       | -                          | 0.28                       | 0.09                        | 0.04 |
| Feb.                          | -                                   | 0.48                       | -                          | 0.25                       | -                          | 0.10                       | -                          | 0.05                       | 0.34                        | 0.24 |
| Mar.                          | -                                   | 0.45                       | -                          | 0.17                       | -                          | 0.03                       | -                          | 0.15                       | 0.49                        | 0.40 |
| Apr.                          | -                                   | 0.06                       | -                          | 0.37                       | -                          | 0.50                       | -                          | 0.66                       | 0.94                        | 0.86 |
| May                           | -                                   | 0.16                       | -                          | 0.54                       | -                          | 0.63                       | -                          | 0.79                       | 1.17                        | 1.08 |
| June                          | -                                   | 0.70                       | -                          | 1.11                       | -                          | 1.17                       | -                          | 1.33                       | 1.68                        | 1.56 |
| July                          | -                                   | 0.42                       | -                          | 0.71                       | -                          | 0.74                       | -                          | 0.88                       | 1.39                        | 1.19 |
| Aug.                          | -                                   | 0.61                       | -                          | 0.84                       | -                          | 0.81                       | -                          | 0.91                       | 1.30                        | 1.21 |
| Sep.                          | -                                   | 1.42                       | -                          | 1.70                       | -                          | 1.66                       | -                          | 1.76                       | 1.96                        | 1.96 |
| Oct.                          | -                                   | 1.91                       | -                          | 2.05                       | -                          | 2.08                       | -                          | 2.16                       | 2.38                        | 2.34 |
| Nov.                          | -                                   | 2.14                       | -                          | 2.17                       | -                          | 2.13                       | -                          | 2.12                       | 2.23                        | 2.19 |
| Dec.                          | -                                   | 2.25                       | -                          | 2.30                       | -                          | 2.23                       | -                          | 2.19                       | 2.19                        | 2.20 |
| 2023 Jan.                     | -                                   | 2.64                       | -                          | 2.56                       | -                          | 2.42                       | -                          | 2.33                       | 2.33                        | 2.29 |
| Feb.                          | -                                   | 2.88                       | -                          | 2.76                       | -                          | 2.64                       | -                          | 2.52                       | 2.50                        | 2.47 |
| Mar.                          | -                                   | 2.94                       | -                          | 2.80                       | -                          | 2.68                       | -                          | 2.56                       | 2.54                        | 2.51 |
| Apr.                          | -                                   | 2.92                       | -                          | 2.72                       | -                          | 2.62                       | -                          | 2.49                       | 2.54                        | 2.50 |
| May                           | -                                   | 2.93                       | -                          | 2.65                       | -                          | 2.55                       | -                          | 2.41                       | 2.55                        | 2.48 |
| June                          | -                                   | 3.21                       | -                          | 2.91                       | -                          | 2.75                       | -                          | 2.58                       | 2.57                        | 2.51 |
| July                          | -                                   | 3.39                       | -                          | 3.09                       | -                          | 2.88                       | -                          | 2.70                       | 2.62                        | 2.57 |
| Aug.                          | -                                   | 3.27                       | -                          | 2.97                       | -                          | 2.81                       | -                          | 2.67                       | 2.73                        | 2.69 |
| Sep.                          | -                                   | 3.38                       | -                          | 3.06                       | -                          | 2.90                       | -                          | 2.76                       | 2.85                        | 2.81 |
| Oct.                          | -                                   | 3.36                       | -                          | 3.04                       | -                          | 2.92                       | -                          | 2.82                       | 3.05                        | 2.98 |
| 2023 Oct. 2                   | -                                   | 3.45                       | -                          | 3.13                       | -                          | 2.99                       | -                          | 2.87                       | 3.06                        | 2.99 |
| 3                             | -                                   | 3.47                       | -                          | 3.14                       | -                          | 3.01                       | -                          | 2.89                       | 3.12                        | 3.05 |
| 4                             | -                                   | 3.46                       | -                          | 3.15                       | -                          | 3.03                       | -                          | 2.93                       | 3.16                        | 3.10 |
| 5                             | -                                   | 3.44                       | -                          | 3.10                       | -                          | 3.01                       | -                          | 2.90                       | 3.14                        | 3.07 |
| 6                             | -                                   | 3.35                       | -                          | 3.04                       | -                          | 2.95                       | -                          | 2.83                       | 3.09                        | 3.02 |
| 9                             | -                                   | 3.32                       | -                          | 3.00                       | -                          | 2.91                       | -                          | 2.79                       | 3.05                        | 2.98 |
| 10                            | -                                   | 3.29                       | -                          | 2.97                       | -                          | 2.87                       | -                          | 2.74                       | 3.00                        | 2.93 |
| 11                            | -                                   | 3.29                       | -                          | 2.97                       | -                          | 2.86                       | -                          | 2.72                       | 2.92                        | 2.85 |
| 12                            | -                                   | 3.33                       | -                          | 2.99                       | -                          | 2.85                       | -                          | 2.76                       | 2.92                        | 2.86 |
| 13                            | -                                   | 3.36                       | -                          | 3.01                       | -                          | 2.86                       | -                          | 2.77                       | 2.94                        | 2.88 |
| 16                            | -                                   | 3.33                       | -                          | 3.01                       | -                          | 2.88                       | -                          | 2.79                       | 2.98                        | 2.91 |
| 17                            | -                                   | 3.36                       | -                          | 3.04                       | -                          | 2.91                       | -                          | 2.81                       | 3.00                        | 2.94 |
| 18                            | -                                   | 3.41                       | -                          | 3.11                       | -                          | 2.99                       | -                          | 2.90                       | 3.09                        | 3.03 |
| 19                            | -                                   | 3.42                       | -                          | 3.13                       | -                          | 3.02                       | -                          | 2.93                       | 3.13                        | 3.07 |
| 20                            | -                                   | 3.39                       | -                          | 3.10                       | -                          | 2.97                       | -                          | 2.89                       | 3.11                        | 3.05 |
| 23                            | -                                   | 3.38                       | -                          | 3.08                       | -                          | 2.97                       | -                          | 2.90                       | 3.15                        | 3.08 |
| 24                            | -                                   | 3.33                       | -                          | 3.02                       | -                          | 2.88                       | -                          | 2.79                       | 2.99                        | 2.93 |
| 25                            | -                                   | 3.34                       | -                          | 3.03                       | -                          | 2.90                       | -                          | 2.82                       | 3.05                        | 2.97 |
| 26                            | -                                   | 3.35                       | -                          | 3.05                       | -                          | 2.91                       | -                          | 2.84                       | 3.09                        | 3.01 |
| 27                            | -                                   | 3.28                       | -                          | 2.98                       | -                          | 2.84                       | -                          | 2.77                       | 3.05                        | 2.96 |
| 30                            | -                                   | 3.25                       | -                          | 2.94                       | -                          | 2.80                       | -                          | 2.73                       | 3.03                        | 2.93 |
| 31                            | -                                   | 3.25                       | -                          | 2.94                       | -                          | 2.79                       | -                          | 2.72                       | 3.00                        | 2.91 |

\* Only bearer bonds by residents with a maximum maturity as per the terms of issue of more than 4 years are included. 1 Adjustment of the scope of securities included on 1 May 2020.

## I. Yields

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

% per annum

| Period    | Total        |                          |                           | of which:   |             |              |   |             |              |  |             |              |
|-----------|--------------|--------------------------|---------------------------|---|-------------|--------------|---|-------------|--------------|--|-------------|--------------|
|           | Average rate | Lowest rate <sup>1</sup> | Highest rate <sup>2</sup> | 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 |
| 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         | 1.81                     | 3.11                      | 1.50  | 1.02        | 2.25         | 2.21  | 1.63        | 2.92         | 2.73   | 2.05        | 3.38         |
| 2011      | 2.39         | 1.46                     | 3.26                      | 1.60  | 0.53        | 2.56         | 2.17  | 1.16        | 3.10         | 2.59   | 1.60        | 3.46         |
| 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       | - 0.14  | - 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         |
| 2020      | - 0.49       | - 0.83                   | - 0.20                    | - 0.72  | - 1.00      | - 0.53       | - 0.64  | - 0.94      | - 0.38       | - 0.49   | - 0.85      | - 0.18       |
| 2021      | - 0.38       | - 0.60                   | - 0.16                    | - 0.68  | - 0.83      | - 0.47       | - 0.56  | - 0.75      | - 0.32       | - 0.34   | - 0.61      | - 0.10       |
| 2022      | 1.08         | - 0.26                   | 2.50                      | 0.87  | - 0.52      | 2.50         | 1.00  | - 0.40      | 2.48         | 1.17   | - 0.19      | 2.53         |
| 2020 Apr. | - 0.44       | - 0.50                   | - 0.34                    | - 0.66  | - 0.72      | - 0.59       | - 0.58  | - 0.65      | - 0.48       | - 0.44   | - 0.51      | - 0.32       |
| May       | - 0.49       | - 0.57                   | - 0.41                    | - 0.73  | - 0.80      | - 0.64       | - 0.65  | - 0.72      | - 0.57       | - 0.50   | - 0.58      | - 0.42       |
| June      | - 0.40       | - 0.49                   | - 0.28                    | - 0.66  | - 0.73      | - 0.59       | - 0.58  | - 0.67      | - 0.47       | - 0.42   | - 0.52      | - 0.28       |
| July      | - 0.48       | - 0.57                   | - 0.42                    | - 0.71  | - 0.77      | - 0.67       | - 0.65  | - 0.72      | - 0.59       | - 0.49   | - 0.58      | - 0.43       |
| Aug.      | - 0.49       | - 0.55                   | - 0.40                    | - 0.72  | - 0.76      | - 0.67       | - 0.65  | - 0.71      | - 0.58       | - 0.49   | - 0.57      | - 0.40       |
| Sep.      | - 0.50       | - 0.55                   | - 0.40                    | - 0.73  | - 0.76      | - 0.67       | - 0.66  | - 0.71      | - 0.57       | - 0.50   | - 0.55      | - 0.39       |
| Oct.      | - 0.58       | - 0.64                   | - 0.52                    | - 0.79  | - 0.84      | - 0.74       | - 0.73  | - 0.79      | - 0.67       | - 0.58   | - 0.64      | - 0.51       |
| Nov.      | - 0.58       | - 0.65                   | - 0.50                    | - 0.79  | - 0.85      | - 0.73       | - 0.74  | - 0.80      | - 0.65       | - 0.58   | - 0.65      | - 0.48       |
| Dec.      | - 0.58       | - 0.63                   | - 0.53                    | - 0.78  | - 0.82      | - 0.74       | - 0.74  | - 0.78      | - 0.68       | - 0.58   | - 0.63      | - 0.52       |
| 2021 Jan. | - 0.55       | - 0.60                   | - 0.51                    | - 0.76  | - 0.79      | - 0.72       | - 0.71  | - 0.74      | - 0.67       | - 0.56   | - 0.61      | - 0.50       |
| Feb.      | - 0.43       | - 0.54                   | - 0.32                    | - 0.71  | - 0.77      | - 0.62       | - 0.61  | - 0.71      | - 0.48       | - 0.41   | - 0.54      | - 0.27       |
| Mar.      | - 0.37       | - 0.41                   | - 0.33                    | - 0.69  | - 0.74      | - 0.66       | - 0.56  | - 0.62      | - 0.53       | - 0.32   | - 0.37      | - 0.27       |
| Apr.      | - 0.33       | - 0.38                   | - 0.27                    | - 0.68  | - 0.71      | - 0.64       | - 0.53  | - 0.59      | - 0.48       | - 0.29   | - 0.34      | - 0.22       |
| May       | - 0.23       | - 0.30                   | - 0.16                    | - 0.62  | - 0.67      | - 0.57       | - 0.45  | - 0.51      | - 0.39       | - 0.18   | - 0.25      | - 0.10       |
| June      | - 0.28       | - 0.33                   | - 0.25                    | - 0.64  | - 0.69      | - 0.62       | - 0.49  | - 0.55      | - 0.47       | - 0.24   | - 0.30      | - 0.20       |
| July      | - 0.41       | - 0.50                   | - 0.28                    | - 0.72  | - 0.80      | - 0.63       | - 0.61  | - 0.71      | - 0.49       | - 0.40   | - 0.49      | - 0.25       |
| Aug.      | - 0.52       | - 0.56                   | - 0.46                    | - 0.79  | - 0.83      | - 0.75       | - 0.70  | - 0.75      | - 0.65       | - 0.50   | - 0.54      | - 0.44       |
| Sep.      | - 0.37       | - 0.44                   | - 0.28                    | - 0.69  | - 0.74      | - 0.63       | - 0.56  | - 0.63      | - 0.46       | - 0.33   | - 0.41      | - 0.22       |
| Oct.      | - 0.25       | - 0.31                   | - 0.19                    | - 0.58  | - 0.67      | - 0.48       | - 0.41  | - 0.50      | - 0.32       | - 0.18   | - 0.25      | - 0.12       |
| Nov.      | - 0.36       | - 0.46                   | - 0.21                    | - 0.64  | - 0.72      | - 0.47       | - 0.50  | - 0.60      | - 0.33       | - 0.30   | - 0.41      | - 0.15       |
| Dec.      | - 0.41       | - 0.47                   | - 0.29                    | - 0.64  | - 0.69      | - 0.55       | - 0.54  | - 0.60      | - 0.43       | - 0.37   | - 0.42      | - 0.24       |
| 2022 Jan. | - 0.19       | - 0.26                   | - 0.13                    | - 0.46  | - 0.52      | - 0.40       | - 0.32  | - 0.40      | - 0.25       | - 0.11   | - 0.19      | - 0.05       |
| Feb.      | 0.07         | - 0.13                   | 0.18                      | - 0.16  | - 0.38      | - 0.06       | - 0.01  | - 0.24      | 0.09         | 0.15   | - 0.06      | 0.27         |
| Mar.      | 0.18         | - 0.22                   | 0.54                      | - 0.09  | - 0.52      | 0.36         | 0.10  | - 0.32      | 0.51         | 0.29   | - 0.10      | 0.62         |
| Apr.      | 0.67         | 0.41                     | 0.83                      | 0.44  | 0.21        | 0.62         | 0.60  | 0.36        | 0.78         | 0.76   | 0.48        | 0.92         |
| May       | 0.86         | 0.74                     | 0.98                      | 0.57  | 0.42        | 0.69         | 0.76  | 0.64        | 0.90         | 0.99   | 0.88        | 1.11         |
| June      | 1.39         | 1.02                     | 1.70                      | 1.13  | 0.72        | 1.51         | 1.29  | 0.90        | 1.65         | 1.49   | 1.13        | 1.78         |
| July      | 1.02         | 0.77                     | 1.28                      | 0.68  | 0.42        | 0.92         | 0.88  | 0.62        | 1.13         | 1.15   | 0.89        | 1.42         |
| Aug.      | 0.97         | 0.60                     | 1.43                      | 0.71  | 0.25        | 1.24         | 0.86  | 0.44        | 1.36         | 1.07   | 0.70        | 1.52         |
| Sep.      | 1.72         | 1.42                     | 2.21                      | 1.56  | 1.16        | 2.07         | 1.68  | 1.34        | 2.20         | 1.81   | 1.53        | 2.31         |
| Oct.      | 2.12         | 1.70                     | 2.41                      | 1.94  | 1.50        | 2.26         | 2.05  | 1.63        | 2.32         | 2.22   | 1.81        | 2.48         |
| Nov.      | 2.05         | 1.84                     | 2.27                      | 2.00  | 1.86        | 2.18         | 2.01  | 1.82        | 2.22         | 2.09   | 1.85        | 2.33         |
| Dec.      | 2.07         | 1.73                     | 2.50                      | 2.09  | 1.74        | 2.50         | 2.06  | 1.71        | 2.48         | 2.10   | 1.77        | 2.53         |
| 2023 Jan. | 2.23         | 2.03                     | 2.47                      | 2.27  | 2.10        | 2.47         | 2.18  | 1.99        | 2.43         | 2.22   | 2.01        | 2.49         |
| Feb.      | 2.41         | 2.14                     | 2.68                      | 2.47  | 2.18        | 2.79         | 2.36  | 2.07        | 2.64         | 2.39   | 2.13        | 2.65         |
| Mar.      | 2.43         | 2.02                     | 2.79                      | 2.50  | 2.01        | 2.94         | 2.38  | 1.94        | 2.77         | 2.41   | 2.03        | 2.76         |
| Apr.      | 2.40         | 2.14                     | 2.54                      | 2.43  | 2.14        | 2.59         | 2.34  | 2.07        | 2.49         | 2.39   | 2.14        | 2.53         |
| May       | 2.37         | 2.25                     | 2.54                      | 2.35  | 2.20        | 2.52         | 2.28  | 2.15        | 2.45         | 2.39   | 2.26        | 2.56         |
| June      | 2.46         | 2.32                     | 2.57                      | 2.54  | 2.33        | 2.68         | 2.38  | 2.22        | 2.50         | 2.42   | 2.31        | 2.52         |
| July      | 2.55         | 2.40                     | 2.71                      | 2.68  | 2.52        | 2.82         | 2.49  | 2.33        | 2.66         | 2.49   | 2.34        | 2.67         |
| Aug.      | 2.60         | 2.49                     | 2.71                      | 2.62  | 2.52        | 2.74         | 2.51  | 2.41        | 2.64         | 2.59   | 2.47        | 2.71         |
| Sep.      | 2.71         | 2.50                     | 2.92                      | 2.73  | 2.52        | 2.88         | 2.61  | 2.41        | 2.81         | 2.71   | 2.50        | 2.94         |
| Oct.      | 2.84         | 2.72                     | 2.95                      | 2.76  | 2.66        | 2.88         | 2.72  | 2.61        | 2.84         | 2.89   | 2.76        | 3.01         |

<sup>1</sup> Historical low: -0.83 on 12 March 2020. <sup>2</sup> Historical high: 11.43 on 7 and 8 September 1981.

## I. Yields

### 3. Yields of current Federal securities

% per annum

| End of year or month or trading day | Daily yield of the current two-year Federal Treasury notes | Daily yield of the current five-year Federal notes | Daily yield of the current 7 year Federal bond | Daily yield of the current 10 year Federal bond | Daily yield of the current 15 year Federal bond | Daily yield of the current 30 year Federal bond |
|-------------------------------------|--|--|--|---|---|---|
| 2012                                | .  | 0.30   | .  | 1.30  | .   | 2.14  |
| 2013                                | .  | 0.95   | .  | 1.96  | .   | 2.77  |
| 2014                                | – 0.10   | 0.02   | .  | 0.56  | .   | 1.41  |
| 2015                                | – 0.34   | – 0.03   | .  | 0.64  | .   | 1.50  |
| 2016                                | – 0.79   | – 0.55   | .  | 0.19  | .   | 0.92  |
| 2017                                | – 0.62   | – 0.20   | .  | 0.42  | .   | 1.25  |
| 2018                                | – 0.63   | – 0.33   | .  | 0.23  | .   | 0.86  |
| 2019                                | – 0.62   | – 0.49   | .  | – 0.21  | .   | 0.33  |
| 2020                                | – 0.71   | – 0.73   | – 0.68   | – 0.56  | – 0.38  | – 0.15  |
| 2021                                | – 0.64   | – 0.47   | – 0.38   | – 0.21  | – 0.01  | – 0.15  |
| 2022                                | 2.71   | 2.53   | 2.49   | 2.51  | 2.61  | 2.46  |
| 2021 Oct.                           | – 0.62   | – 0.41   | – 0.26   | – 0.10  | – 0.05  | – 0.18  |
| Nov.                                | – 0.77   | – 0.65   | – 0.53   | – 0.36  | – 0.17  | – 0.03  |
| Dec.                                | – 0.64   | – 0.47   | – 0.38   | – 0.21  | – 0.01  | – 0.15  |
| 2022 Jan.                           | – 0.57   | – 0.26   | – 0.21   | – 0.02  | – 0.12  | – 0.26  |
| Feb.                                | – 0.45   | – 0.05   | – 0.01   | – 0.19  | – 0.33  | – 0.45  |
| Mar.                                | – 0.04   | – 0.43   | – 0.47   | – 0.60  | – 0.69  | – 0.71  |
| Apr.                                | 0.23   | 0.69   | 0.73   | 0.90  | 1.07  | 1.03  |
| May                                 | 0.45   | 0.79   | 0.86   | 1.07  | 1.31  | 1.33  |
| June                                | 0.70   | 1.14   | 1.21   | 1.44  | 1.68  | 1.66  |
| July                                | 0.30   | 0.60   | 0.63   | 0.91  | 1.14  | 1.16  |
| Aug.                                | 1.17   | 1.36   | 1.35   | 1.54  | 1.69  | 1.63  |
| Sep.                                | 1.75   | 1.96   | 1.96   | 2.12  | 2.24  | 2.08  |
| Oct.                                | 1.94   | 2.03   | 2.11   | 2.15  | 2.32  | 2.21  |
| Nov.                                | 2.15   | 1.98   | 1.91   | 1.94  | 2.01  | 1.82  |
| Dec.                                | 2.71   | 2.53   | 2.49   | 2.51  | 2.61  | 2.46  |
| 2023 Jan.                           | 2.65   | 2.32   | 2.27   | 2.30  | 2.38  | 2.24  |
| Feb.                                | 3.14   | 2.73   | 2.67   | 2.64  | 2.74  | 2.59  |
| Mar.                                | 2.74   | 2.42   | 2.37   | 2.36  | 2.49  | 2.38  |
| Apr.                                | 2.69   | 2.35   | 2.33   | 2.36  | 2.52  | 2.45  |
| May                                 | 2.72   | 2.27   | 2.25   | 2.27  | 2.48  | 2.44  |
| June                                | 3.20   | 2.58   | 2.51   | 2.44  | 2.54  | 2.45  |
| July                                | 3.07   | 2.57   | 2.52   | 2.52  | 2.66  | 2.59  |
| Aug.                                | 3.00   | 2.51   | 2.48   | 2.50  | 2.65  | 2.62  |
| Sep.                                | 3.23   | 2.81   | 2.80   | 2.86  | 3.01  | 3.02  |
| Oct.                                | 3.00   | 2.64   | 2.67   | 2.78  | 3.01  | 3.05  |
| 2023 Oct. 9                         | 3.10   | 2.71   | 2.75   | 2.84  | 3.04  | 3.08  |
| 10                                  | 3.07   | 2.67   | 2.70   | 2.80  | 2.99  | 3.03  |
| 11                                  | 3.08   | 2.64   | 2.65   | 2.72  | 2.92  | 2.93  |
| 12                                  | 3.11   | 2.66   | 2.67   | 2.73  | 2.92  | 2.92  |
| 13                                  | 3.13   | 2.68   | 2.69   | 2.75  | 2.94  | 2.94  |
| 16                                  | 3.15   | 2.70   | 2.71   | 2.78  | 2.97  | 2.99  |
| 17                                  | 3.12   | 2.73   | 2.74   | 2.81  | 3.00  | 3.01  |
| 18                                  | 3.18   | 2.83   | 2.83   | 2.91  | 3.10  | 3.09  |
| 19                                  | 3.19   | 2.86   | 2.86   | 2.94  | 3.13  | 3.11  |
| 20                                  | 3.16   | 2.82   | 2.83   | 2.92  | 3.12  | 3.11  |
| 23                                  | 3.14   | 2.82   | 2.85   | 2.95  | 3.15  | 3.16  |
| 24                                  | 3.09   | 2.70   | 2.71   | 2.79  | 2.99  | 2.99  |
| 25                                  | 3.10   | 2.74   | 2.75   | 2.84  | 3.06  | 3.06  |
| 26                                  | 3.11   | 2.76   | 2.79   | 2.89  | 3.10  | 3.12  |
| 27                                  | 3.04   | 2.69   | 2.73   | 2.83  | 3.06  | 3.10  |
| 30                                  | 3.01   | 2.66   | 2.69   | 2.80  | 3.04  | 3.10  |
| 31                                  | 3.00   | 2.64   | 2.67   | 2.78  | 3.01  | 3.05  |
| Nov. 1                              | 3.01   | 2.67   | 2.71   | 2.83  | 3.07  | 3.12  |
| 2                                   | 2.95   | 2.57   | 2.61   | 2.71  | 2.96  | 3.01  |
| 3                                   | 3.00   | 2.61   | 2.63   | 2.72  | 2.96  | 3.00  |
| 6                                   | 2.99   | 2.59   | 2.61   | 2.70  | 2.94  | 2.97  |

## I. Yields

### still: 3. Yields of current Federal securities - average, highest and lowest rates

% p.a.

| Period    | Daily yield of the current two-year Federal Treasury notes |             |              | Daily yield of the current five-year Federal notes |             |              | Daily yield of the current 7 year Federal bond |             |              |
|-----------|--|-------------|--------------|--|-------------|--------------|--|-------------|--------------|
|           | Average rate   | Lowest rate | Highest rate | Average rate                                       | Lowest rate | Highest rate | Average rate                                   | Lowest rate | Highest rate |
| 2006      | .  | .           | .            | 3.70   | 3.58        | 3.92         | .  | .           | .            |
| 2007      | .  | .           | .            | 4.14   | 3.76        | 4.64         | .  | .           | .            |
| 2008      | .  | .           | .            | 3.71   | 2.31        | 4.75         | .  | .           | .            |
| 2009      | .  | .           | .            | 2.39   | 2.01        | 2.87         | .  | .           | .            |
| 2010      | .  | .           | .            | 1.79   | 1.18        | 2.45         | .  | .           | .            |
| 2011      | .  | .           | .            | 1.83   | 0.77        | 2.81         | .  | .           | .            |
| 2012      | .  | .           | .            | 0.57   | 0.25        | 1.07         | .  | .           | .            |
| 2013      | .  | .           | .            | 0.63   | 0.28        | 1.08         | .  | .           | .            |
| 2014      | 0.04   | 0.10        | 0.23         | 0.40   | 0.02        | 0.95         | .  | .           | .            |
| 2015      | 0.25   | 0.45        | 0.11         | 0.01   | 0.21        | 0.25         | .  | .           | .            |
| 2016      | 0.59   | 0.84        | 0.36         | 0.41   | 0.63        | 0.08         | .  | .           | .            |
| 2017      | 0.72   | 0.96        | 0.58         | 0.34   | 0.59        | 0.08         | .  | .           | .            |
| 2018      | 0.59   | 0.82        | 0.50         | 0.14   | 0.40        | 0.13         | .  | .           | .            |
| 2019      | 0.67   | 0.94        | 0.51         | 0.55   | 0.96        | 0.27         | .  | .           | .            |
| 2020      | 0.71   | 1.02        | 0.59         | 0.68   | 0.96        | 0.46         | 0.64   | 0.77        | 0.42         |
| 2021      | 0.70   | 0.79        | 0.60         | 0.62   | 0.77        | 0.40         | 0.49   | 0.72        | 0.25         |
| 2022      | 0.74   | 0.78        | 2.71         | 0.98   | 0.44        | 2.53         | 1.02   | 0.36        | 2.49         |
| 2020 Apr. | 0.68   | 0.73        | 0.63         | 0.63   | 0.70        | 0.54         | .  | .           | .            |
| May       | 0.72   | 0.79        | 0.64         | 0.70   | 0.77        | 0.62         | 0.59   | 0.66        | 0.53         |
| June      | 0.66   | 0.71        | 0.61         | 0.64   | 0.71        | 0.56         | 0.53   | 0.62        | 0.42         |
| July      | 0.69   | 0.72        | 0.66         | 0.67   | 0.74        | 0.63         | 0.60   | 0.68        | 0.55         |
| Aug.      | 0.68   | 0.72        | 0.65         | 0.68   | 0.73        | 0.63         | 0.61   | 0.67        | 0.54         |
| Sep.      | 0.70   | 0.73        | 0.66         | 0.70   | 0.73        | 0.63         | 0.63   | 0.68        | 0.53         |
| Oct.      | 0.75   | 0.80        | 0.70         | 0.77   | 0.83        | 0.71         | 0.71   | 0.76        | 0.64         |
| Nov.      | 0.76   | 0.81        | 0.72         | 0.77   | 0.83        | 0.70         | 0.70   | 0.77        | 0.62         |
| Dec.      | 0.75   | 0.79        | 0.71         | 0.77   | 0.81        | 0.72         | 0.70   | 0.75        | 0.65         |
| 2021 Jan. | 0.72   | 0.75        | 0.70         | 0.73   | 0.77        | 0.69         | 0.68   | 0.72        | 0.63         |
| Feb.      | 0.71   | 0.73        | 0.66         | 0.66   | 0.73        | 0.56         | 0.59   | 0.68        | 0.47         |
| Mar.      | 0.70   | 0.72        | 0.67         | 0.64   | 0.69        | 0.60         | 0.54   | 0.60        | 0.51         |
| Apr.      | 0.70   | 0.72        | 0.68         | 0.62   | 0.66        | 0.57         | 0.50   | 0.56        | 0.37         |
| May       | 0.67   | 0.70        | 0.65         | 0.55   | 0.61        | 0.49         | 0.34   | 0.40        | 0.27         |
| June      | 0.67   | 0.70        | 0.65         | 0.59   | 0.64        | 0.56         | 0.38   | 0.45        | 0.36         |
| July      | 0.70   | 0.76        | 0.67         | 0.65   | 0.74        | 0.57         | 0.52   | 0.62        | 0.39         |
| Aug.      | 0.75   | 0.79        | 0.74         | 0.73   | 0.77        | 0.70         | 0.64   | 0.67        | 0.59         |
| Sep.      | 0.71   | 0.73        | 0.69         | 0.63   | 0.69        | 0.54         | 0.49   | 0.57        | 0.39         |
| Oct.      | 0.67   | 0.71        | 0.62         | 0.50   | 0.59        | 0.41         | 0.34   | 0.43        | 0.25         |
| Nov.      | 0.73   | 0.78        | 0.60         | 0.56   | 0.65        | 0.40         | 0.44   | 0.53        | 0.26         |
| Dec.      | 0.70   | 0.74        | 0.64         | 0.57   | 0.63        | 0.47         | 0.48   | 0.55        | 0.38         |
| 2022 Jan. | 0.60   | 0.65        | 0.57         | 0.36   | 0.44        | 0.26         | 0.27   | 0.36        | 0.21         |
| Feb.      | 0.40   | 0.50        | 0.24         | 0.03   | 0.24        | 0.08         | 0.02   | 0.20        | 0.12         |
| Mar.      | 0.39   | 0.78        | 0.00         | 0.05   | 0.39        | 0.50         | 0.11   | 0.30        | 0.51         |
| Apr.      | 0.08   | 0.11        | 0.26         | 0.56   | 0.34        | 0.74         | 0.62   | 0.37        | 0.80         |
| May       | 0.29   | 0.06        | 0.45         | 0.69   | 0.54        | 0.81         | 0.78   | 0.66        | 0.92         |
| June      | 0.88   | 0.51        | 1.21         | 1.26   | 0.84        | 1.65         | 1.31   | 0.91        | 1.64         |
| July      | 0.47   | 0.30        | 0.65         | 0.86   | 0.60        | 1.09         | 0.89   | 0.63        | 1.14         |
| Aug.      | 0.66   | 0.18        | 1.17         | 0.86   | 0.42        | 1.36         | 0.85   | 0.45        | 1.35         |
| Sep.      | 1.51   | 1.02        | 1.96         | 1.68   | 1.32        | 2.22         | 1.66   | 1.32        | 2.20         |
| Oct.      | 1.88   | 1.47        | 2.18         | 2.04   | 1.61        | 2.34         | 2.08   | 1.62        | 2.40         |
| Nov.      | 2.12   | 1.88        | 2.30         | 2.03   | 1.86        | 2.23         | 2.05   | 1.83        | 2.28         |
| Dec.      | 2.31   | 1.96        | 2.71         | 2.11   | 1.74        | 2.53         | 2.08   | 1.75        | 2.49         |
| 2023 Jan. | 2.59   | 2.49        | 2.68         | 2.26   | 2.08        | 2.48         | 2.21   | 2.02        | 2.44         |
| Feb.      | 2.80   | 2.52        | 3.14         | 2.45   | 2.15        | 2.73         | 2.39   | 2.11        | 2.67         |
| Mar.      | 2.81   | 2.24        | 3.34         | 2.45   | 1.97        | 2.86         | 2.41   | 1.97        | 2.79         |
| Apr.      | 2.78   | 2.47        | 2.95         | 2.40   | 2.13        | 2.55         | 2.37   | 2.11        | 2.53         |
| May       | 2.69   | 2.52        | 2.89         | 2.33   | 2.18        | 2.50         | 2.32   | 2.18        | 2.49         |
| June      | 3.00   | 2.75        | 3.20         | 2.47   | 2.29        | 2.60         | 2.41   | 2.25        | 2.53         |
| July      | 3.14   | 2.98        | 3.28         | 2.58   | 2.41        | 2.75         | 2.52   | 2.35        | 2.69         |
| Aug.      | 3.02   | 2.91        | 3.13         | 2.58   | 2.48        | 2.72         | 2.55   | 2.43        | 2.68         |
| Sep.      | 3.16   | 2.96        | 3.31         | 2.68   | 2.48        | 2.85         | 2.66   | 2.45        | 2.86         |
| Oct.      | 3.12   | 3.00        | 3.22         | 2.74   | 2.64        | 2.86         | 2.77   | 2.65        | 2.90         |

## I. Yields

### still: 3. Yields of current Federal securities - average, highest and lowest rates

% p.a.

| Period    | Daily yield of the current<br>10 year Federal bond |             |              | Daily yield of the current<br>15 year Federal bond |             |              | Daily yield of the current<br>30 year Federal bond |             |              |
|-----------|--|-------------|--------------|--|-------------|--------------|--|-------------|--------------|
|           | Average rate                                       | Lowest rate | Highest rate | Average rate                                       | Lowest rate | Highest rate | Average rate                                       | Lowest rate | Highest rate |
| 2006      | 3.77   | 3.24        | 4.12         | .  | .           | .            | 4.00   | 3.50        | 4.38         |
| 2007      | 4.23   | 3.88        | 4.68         | .  | .           | .            | 4.42   | 4.03        | 4.83         |
| 2008      | 4.01   | 2.93        | 4.68         | .  | .           | .            | 4.49   | 3.18        | 4.89         |
| 2009      | 3.27   | 2.91        | 3.70         | .  | .           | .            | 4.03   | 3.53        | 4.49         |
| 2010      | 2.77   | 2.10        | 3.41         | .  | .           | .            | 3.43   | 2.60        | 4.13         |
| 2011      | 2.65   | 1.68        | 3.49         | .  | .           | .            | 3.26   | 2.37        | 3.97         |
| 2012      | 1.57   | 1.13        | 2.06         | .  | .           | .            | 2.31   | 1.67        | 2.67         |
| 2013      | 1.63   | 1.19        | 2.06         | .  | .           | .            | 2.47   | 2.07        | 2.79         |
| 2014      | 1.24   | 0.56        | 1.95         | .  | .           | .            | 2.14   | 1.41        | 2.76         |
| 2015      | 0.54   | 0.07        | 1.01         | .  | .           | .            | 1.22   | 0.46        | 1.74         |
| 2016      | 0.13   | 0.20        | 0.59         | .  | .           | .            | 0.78   | 0.30        | 1.43         |
| 2017      | 0.38   | 0.17        | 0.59         | .  | .           | .            | 1.17   | 0.90        | 1.37         |
| 2018      | 0.47   | 0.21        | 0.78         | .  | .           | .            | 1.13   | 0.84        | 1.42         |
| 2019      | 0.21   | 0.74        | 0.29         | .  | .           | .            | 0.37   | 0.27        | 0.88         |
| 2020      | 0.48   | 0.83        | 0.17         | 0.31   | 0.47        | 0.04         | 0.04   | 0.50        | 0.36         |
| 2021      | 0.31   | 0.61        | 0.08         | 0.08   | 0.43        | 0.22         | 0.15   | 0.20        | 0.48         |
| 2022      | 1.18   | 0.18        | 2.51         | 1.34   | 0.01        | 2.67         | 1.32   | 0.14        | 2.55         |
| 2020 Apr. | 0.44   | 0.51        | 0.32         | .  | .           | .            | 0.03   | 0.10        | 0.08         |
| May       | 0.50   | 0.58        | 0.43         | 0.27   | 0.34        | 0.21         | 0.06   | 0.16        | 0.03         |
| June      | 0.40   | 0.48        | 0.28         | 0.19   | 0.29        | 0.04         | 0.07   | 0.04        | 0.25         |
| July      | 0.47   | 0.55        | 0.41         | 0.27   | 0.37        | 0.20         | 0.04   | 0.14        | 0.04         |
| Aug.      | 0.48   | 0.54        | 0.39         | 0.28   | 0.36        | 0.16         | 0.05   | 0.13        | 0.09         |
| Sep.      | 0.49   | 0.55        | 0.39         | 0.29   | 0.35        | 0.16         | 0.05   | 0.13        | 0.08         |
| Oct.      | 0.57   | 0.64        | 0.51         | 0.38   | 0.46        | 0.31         | 0.16   | 0.24        | 0.08         |
| Nov.      | 0.58   | 0.65        | 0.48         | 0.39   | 0.47        | 0.28         | 0.17   | 0.26        | 0.05         |
| Dec.      | 0.58   | 0.63        | 0.52         | 0.40   | 0.46        | 0.32         | 0.17   | 0.23        | 0.10         |
| 2021 Jan. | 0.53   | 0.61        | 0.48         | 0.37   | 0.43        | 0.31         | 0.12   | 0.20        | 0.06         |
| Feb.      | 0.40   | 0.51        | 0.25         | 0.20   | 0.34        | 0.05         | 0.08   | 0.08        | 0.24         |
| Mar.      | 0.32   | 0.37        | 0.26         | 0.04   | 0.11        | 0.04         | 0.21   | 0.16        | 0.29         |
| Apr.      | 0.27   | 0.33        | 0.20         | 0.02   | 0.04        | 0.09         | 0.28   | 0.22        | 0.35         |
| May       | 0.16   | 0.23        | 0.09         | 0.13   | 0.06        | 0.22         | 0.40   | 0.33        | 0.48         |
| June      | 0.20   | 0.29        | 0.16         | 0.08   | 0.02        | 0.12         | 0.32   | 0.25        | 0.38         |
| July      | 0.34   | 0.45        | 0.19         | 0.09   | 0.19        | 0.07         | 0.14   | 0.04        | 0.31         |
| Aug.      | 0.46   | 0.50        | 0.41         | 0.22   | 0.27        | 0.16         | 0.01   | 0.06        | 0.06         |
| Sep.      | 0.31   | 0.39        | 0.20         | 0.05   | 0.14        | 0.06         | 0.20   | 0.10        | 0.30         |
| Oct.      | 0.15   | 0.23        | 0.08         | 0.07   | 0.03        | 0.12         | 0.28   | 0.13        | 0.38         |
| Nov.      | 0.25   | 0.36        | 0.10         | 0.08   | 0.17        | 0.04         | 0.07   | 0.03        | 0.17         |
| Dec.      | 0.33   | 0.39        | 0.21         | 0.15   | 0.23        | 0.01         | 0.01   | 0.11        | 0.15         |
| 2022 Jan. | 0.06   | 0.18        | 0.01         | 0.09   | 0.01        | 0.15         | 0.25   | 0.17        | 0.30         |
| Feb.      | 0.19   | 0.01        | 0.31         | 0.31   | 0.13        | 0.44         | 0.42   | 0.27        | 0.56         |
| Mar.      | 0.32   | 0.07        | 0.65         | 0.45   | 0.06        | 0.73         | 0.50   | 0.14        | 0.75         |
| Apr.      | 0.78   | 0.49        | 0.95         | 0.90   | 0.61        | 1.07         | 0.91   | 0.64        | 1.08         |
| May       | 0.99   | 0.89        | 1.13         | 1.18   | 1.07        | 1.31         | 1.16   | 1.05        | 1.33         |
| June      | 1.49   | 1.12        | 1.78         | 1.70   | 1.35        | 1.96         | 1.69   | 1.38        | 1.92         |
| July      | 1.17   | 0.91        | 1.40         | 1.40   | 1.14        | 1.66         | 1.42   | 1.16        | 1.68         |
| Aug.      | 1.09   | 0.73        | 1.54         | 1.28   | 0.97        | 1.69         | 1.28   | 1.00        | 1.63         |
| Sep.      | 1.82   | 1.55        | 2.33         | 1.95   | 1.72        | 2.40         | 1.83   | 1.68        | 2.20         |
| Oct.      | 2.21   | 1.81        | 2.48         | 2.39   | 1.98        | 2.67         | 2.25   | 1.85        | 2.55         |
| Nov.      | 2.08   | 1.83        | 2.33         | 2.21   | 1.95        | 2.45         | 2.07   | 1.79        | 2.32         |
| Dec.      | 2.10   | 1.76        | 2.51         | 2.16   | 1.83        | 2.61         | 1.96   | 1.62        | 2.46         |
| 2023 Jan. | 2.23   | 2.02        | 2.48         | 2.32   | 2.12        | 2.58         | 2.17   | 1.97        | 2.44         |
| Feb.      | 2.40   | 2.14        | 2.64         | 2.49   | 2.26        | 2.74         | 2.36   | 2.18        | 2.59         |
| Mar.      | 2.40   | 2.02        | 2.76         | 2.51   | 2.17        | 2.84         | 2.40   | 2.11        | 2.68         |
| Apr.      | 2.38   | 2.13        | 2.52         | 2.52   | 2.29        | 2.65         | 2.45   | 2.23        | 2.56         |
| May       | 2.36   | 2.24        | 2.52         | 2.55   | 2.40        | 2.72         | 2.52   | 2.36        | 2.68         |
| June      | 2.39   | 2.28        | 2.49         | 2.55   | 2.44        | 2.65         | 2.50   | 2.38        | 2.61         |
| July      | 2.49   | 2.34        | 2.66         | 2.59   | 2.46        | 2.75         | 2.51   | 2.35        | 2.67         |
| Aug.      | 2.57   | 2.46        | 2.70         | 2.71   | 2.60        | 2.82         | 2.66   | 2.55        | 2.77         |
| Sep.      | 2.68   | 2.48        | 2.92         | 2.84   | 2.63        | 3.08         | 2.83   | 2.60        | 3.10         |
| Oct.      | 2.85   | 2.72        | 2.97         | 3.05   | 2.92        | 3.16         | 3.07   | 2.92        | 3.18         |



## 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   |          |      |   |      |   |      |   |      |   |      |
| 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 | –       | 0.14 | –       | 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 |
| 2022   | May     | –   | 0.03 |         | 0.35 |         | 0.55 |         | 0.67 |         | 0.77 |          | 0.85 |   | 0.91 |   | 0.98 |   | 1.03 |   | 1.08 |
|  | June    |   | 0.32 |         | 0.66 |         | 0.81 |         | 0.93 |         | 1.03 |          | 1.14 |   | 1.23 |   | 1.31 |   | 1.38 |   | 1.45 |
|  | July    |   | 0.17 |         | 0.22 |         | 0.32 |         | 0.42 |         | 0.53 |          | 0.62 |   | 0.71 |   | 0.78 |   | 0.85 |   | 0.91 |
|  | Aug.    |   | 0.65 |         | 1.06 |         | 1.20 |         | 1.26 |         | 1.30 |          | 1.34 |   | 1.39 |   | 1.43 |   | 1.48 |   | 1.52 |
|  | Sep.    |   | 1.54 |         | 1.67 |         | 1.77 |         | 1.85 |         | 1.92 |          | 1.98 |   | 2.03 |   | 2.07 |   | 2.10 |   | 2.12 |
|  | Oct.    |   | 1.93 |         | 1.92 |         | 1.92 |         | 1.95 |         | 2.00 |          | 2.05 |   | 2.09 |   | 2.13 |   | 2.17 |   | 2.19 |
|  | Nov.    |   | 2.00 |         | 2.08 |         | 2.01 |         | 1.95 |         | 1.92 |          | 1.92 |   | 1.92 |   | 1.92 |   | 1.93 |   | 1.94 |
|  | Dec.    |   | 2.39 |         | 2.59 |         | 2.55 |         | 2.50 |         | 2.47 |          | 2.47 |   | 2.48 |   | 2.50 |   | 2.51 |   | 2.53 |
| 2023   | Jan.    |   | 2.65 |         | 2.59 |         | 2.43 |         | 2.31 |         | 2.25 |          | 2.23 |   | 2.23 |   | 2.25 |   | 2.27 |   | 2.28 |
|  | Feb.    |   | 3.17 |         | 3.11 |         | 2.92 |         | 2.78 |         | 2.69 |          | 2.65 |   | 2.63 |   | 2.63 |   | 2.64 |   | 2.65 |
|  | Mar.    |   | 2.82 |         | 2.65 |         | 2.53 |         | 2.44 |         | 2.39 |          | 2.36 |   | 2.34 |   | 2.34 |   | 2.34 |   | 2.35 |
|  | Apr.    |   | 2.90 |         | 2.69 |         | 2.49 |         | 2.37 |         | 2.32 |          | 2.31 |   | 2.31 |   | 2.32 |   | 2.34 |   | 2.35 |
|  | May     |   | 2.97 |         | 2.71 |         | 2.53 |         | 2.41 |         | 2.33 |          | 2.28 |   | 2.26 |   | 2.25 |   | 2.26 |   | 2.28 |
|  | June    |   | 3.43 |         | 3.14 |         | 2.86 |         | 2.66 |         | 2.55 |          | 2.48 |   | 2.45 |   | 2.43 |   | 2.43 |   | 2.43 |
|  | July    |   | 3.39 |         | 3.07 |         | 2.80 |         | 2.62 |         | 2.53 |          | 2.48 |   | 2.47 |   | 2.48 |   | 2.50 |   | 2.52 |
|  | Aug.    |   | 3.34 |         | 2.98 |         | 2.70 |         | 2.54 |         | 2.47 |          | 2.44 |   | 2.44 |   | 2.46 |   | 2.48 |   | 2.51 |
|  | Sep.    |   | 3.58 |         | 3.19 |         | 2.92 |         | 2.80 |         | 2.76 |          | 2.76 |   | 2.78 |   | 2.80 |   | 2.84 |   | 2.87 |
|  | Oct.    |   | 3.47 |         | 3.00 |         | 2.74 |         | 2.63 |         | 2.61 |          | 2.63 |   | 2.66 |   | 2.71 |   | 2.76 |   | 2.80 |
| 2023   | Oct. 2  |   | 3.56 |         | 3.18 |         | 2.91 |         | 2.79 |         | 2.75 |          | 2.76 |   | 2.78 |   | 2.82 |   | 2.85 |   | 2.89 |
|  | 3       |   | 3.56 |         | 3.18 |         | 2.93 |         | 2.82 |         | 2.78 |          | 2.79 |   | 2.82 |   | 2.86 |   | 2.90 |   | 2.94 |
|  | 4       |   | 3.55 |         | 3.18 |         | 2.94 |         | 2.84 |         | 2.82 |          | 2.83 |   | 2.86 |   | 2.90 |   | 2.95 |   | 2.99 |
|  | 5       |   | 3.54 |         | 3.15 |         | 2.91 |         | 2.81 |         | 2.79 |          | 2.80 |   | 2.84 |   | 2.88 |   | 2.92 |   | 2.97 |
|  | 6       |   | 3.51 |         | 3.10 |         | 2.85 |         | 2.75 |         | 2.73 |          | 2.74 |   | 2.78 |   | 2.82 |   | 2.87 |   | 2.91 |
|  | 9       |   | 3.49 |         | 3.06 |         | 2.81 |         | 2.70 |         | 2.68 |          | 2.69 |   | 2.73 |   | 2.77 |   | 2.82 |   | 2.86 |
|  | 10      |   | 3.47 |         | 3.03 |         | 2.77 |         | 2.66 |         | 2.63 |          | 2.65 |   | 2.68 |   | 2.72 |   | 2.76 |   | 2.81 |
|  | 11      |   | 3.47 |         | 3.03 |         | 2.76 |         | 2.64 |         | 2.60 |          | 2.60 |   | 2.63 |   | 2.66 |   | 2.70 |   | 2.74 |
|  | 12      |   | 3.49 |         | 3.07 |         | 2.79 |         | 2.66 |         | 2.62 |          | 2.62 |   | 2.64 |   | 2.67 |   | 2.71 |   | 2.75 |
|  | 13      |   | 3.51 |         | 3.08 |         | 2.81 |         | 2.68 |         | 2.64 |          | 2.64 |   | 2.66 |   | 2.69 |   | 2.73 |   | 2.77 |
|  | 16      |   | 3.51 |         | 3.10 |         | 2.83 |         | 2.70 |         | 2.66 |          | 2.66 |   | 2.69 |   | 2.72 |   | 2.76 |   | 2.80 |
|  | 17      |   | 3.53 |         | 3.13 |         | 2.86 |         | 2.73 |         | 2.69 |          | 2.69 |   | 2.71 |   | 2.75 |   | 2.78 |   | 2.82 |
|  | 18      |   | 3.56 |         | 3.20 |         | 2.94 |         | 2.82 |         | 2.79 |          | 2.79 |   | 2.82 |   | 2.85 |   | 2.89 |   | 2.93 |
|  | 19      |   | 3.57 |         | 3.21 |         | 2.97 |         | 2.85 |         | 2.82 |          | 2.82 |   | 2.85 |   | 2.89 |   | 2.92 |   | 2.96 |
|  | 20      |   | 3.55 |         | 3.17 |         | 2.92 |         | 2.81 |         | 2.78 |          | 2.79 |   | 2.82 |   | 2.86 |   | 2.90 |   | 2.94 |
|  | 23      |   | 3.54 |         | 3.15 |         | 2.90 |         | 2.80 |         | 2.78 |          | 2.80 |   | 2.84 |   | 2.88 |   | 2.93 |   | 2.97 |
|  | 24      |   | 3.51 |         | 3.09 |         | 2.82 |         | 2.70 |         | 2.66 |          | 2.67 |   | 2.70 |   | 2.73 |   | 2.77 |   | 2.81 |
|  | 25      |   | 3.52 |         | 3.10 |         | 2.84 |         | 2.73 |         | 2.70 |          | 2.71 |   | 2.74 |   | 2.78 |   | 2.83 |   | 2.87 |
|  | 26      |   | 3.53 |         | 3.11 |         | 2.86 |         | 2.75 |         | 2.72 |          | 2.74 |   | 2.77 |   | 2.82 |   | 2.86 |   | 2.90 |
|  | 27      |   | 3.49 |         | 3.04 |         | 2.78 |         | 2.68 |         | 2.66 |          | 2.68 |   | 2.71 |   | 2.76 |   | 2.81 |   | 2.85 |
|  | 30      |   | 3.47 |         | 3.01 |         | 2.75 |         | 2.65 |         | 2.63 |          | 2.65 |   | 2.68 |   | 2.73 |   | 2.78 |   | 2.82 |
|  | 31      |   | 3.47 |         | 3.00 |         | 2.74 |         | 2.63 |         | 2.61 |          | 2.63 |   | 2.66 |   | 2.71 |   | 2.76 |   | 2.80 |
| Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments |         |   |      |         |      |         |      |         |      |         |      |          |      |   |      |   |      |   |      |   |      |
| 2023   | Oct. 31 |   | 3.47 |         | 3.01 |         | 2.75 |         | 2.64 |         | 2.62 |          | 2.64 |   | 2.67 |   | 2.71 |   | 2.75 |   | 2.79 |
| Parameters for calculating the term structure of interest rates  |         |   |      |         |      |         |      |         |      |         |      |          |      |   |      |   |      |   |      |   |      |
|  |         | Beta0   |      | Beta1   |      | Beta2   |      | Beta3   |      | Tau1    |      | Tau2     |      |   |      |   |      |   |      |   |      |
| 2023   | Oct. 31 | 1.04268   |      | 2.27075 |      | 3.90732 |      | 6.31426 |      | 0.54841 |      | 14.03597 |      |   |      |   |      |   |      |   |      |
|  | Nov. 1  | 1.11518   |      | 2.13005 |      | 4.01000 |      | 6.35147 |      | 0.52406 |      | 14.29150 |      |   |      |   |      |   |      |   |      |
|  | 2       | 1.00398   |      | 2.37586 |      | 3.79464 |      | 6.32487 |      | 0.54356 |      | 14.48265 |      |   |      |   |      |   |      |   |      |
|  | 3       | 0.98832   |      | 2.38900 |      | 3.85466 |      | 6.30375 |      | 0.56501 |      | 14.23206 |      |   |      |   |      |   |      |   |      |
|  | 6       | 0.95891   |      | 2.43285 |      | 3.83715 |      | 6.28894 |      | 0.57274 |      | 14.15511 |      |   |      |   |      |   |      |   |      |

\* 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   |
| 2012   |    | 1.55  | 1.69    | 1.82    | 1.93    | 2.02    | 2.09     | 2.16 | 2.20 | 2.24 | 2.27 |
| 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    | 0.00    | 0.04    | 0.07     | 0.11 | 0.13 | 0.16 | 0.19 |
| 2020   |    | 0.53  | 0.50    | 0.46    | 0.43    | 0.40    | 0.37     | 0.35 | 0.32 | 0.30 | 0.28 |
| 2021   |    | 0.20  | 0.16    | 0.13    | 0.10    | 0.07    | 0.05     | 0.03 | 0.01 | 0.01 | 0.02 |
| 2022   |    | 2.55  | 2.56    | 2.57    | 2.57    | 2.58    | 2.58     | 2.57 | 2.57 | 2.56 | 2.55 |
| 2022 May   |    | 1.13  | 1.16    | 1.20    | 1.23    | 1.25    | 1.27     | 1.29 | 1.31 | 1.32 | 1.33 |
| June   |    | 1.50  | 1.55    | 1.59    | 1.63    | 1.65    | 1.68     | 1.69 | 1.71 | 1.72 | 1.72 |
| July   |    | 0.96  | 1.01    | 1.05    | 1.08    | 1.11    | 1.13     | 1.15 | 1.16 | 1.18 | 1.18 |
| Aug.   |    | 1.56  | 1.59    | 1.62    | 1.64    | 1.66    | 1.68     | 1.69 | 1.69 | 1.70 | 1.69 |
| Sep.   |    | 2.14  | 2.16    | 2.17    | 2.18    | 2.18    | 2.18     | 2.18 | 2.18 | 2.17 | 2.17 |
| Oct.   |    | 2.22  | 2.24    | 2.25    | 2.26    | 2.27    | 2.28     | 2.28 | 2.28 | 2.27 | 2.27 |
| Nov.   |    | 1.94  | 1.95    | 1.95    | 1.95    | 1.94    | 1.94     | 1.93 | 1.92 | 1.91 | 1.90 |
| Dec.   |    | 2.55  | 2.56    | 2.57    | 2.57    | 2.58    | 2.58     | 2.57 | 2.57 | 2.56 | 2.55 |
| 2023 Jan.  |    | 2.30  | 2.32    | 2.33    | 2.34    | 2.34    | 2.35     | 2.34 | 2.34 | 2.33 | 2.32 |
| Feb.   |    | 2.66  | 2.67    | 2.67    | 2.68    | 2.68    | 2.68     | 2.68 | 2.67 | 2.67 | 2.66 |
| Mar.   |    | 2.36  | 2.38    | 2.39    | 2.40    | 2.42    | 2.42     | 2.43 | 2.44 | 2.44 | 2.44 |
| Apr.   |    | 2.37  | 2.38    | 2.39    | 2.40    | 2.41    | 2.41     | 2.42 | 2.43 | 2.43 | 2.44 |
| May  |    | 2.30  | 2.32    | 2.35    | 2.37    | 2.40    | 2.42     | 2.43 | 2.45 | 2.46 | 2.46 |
| June   |    | 2.43  | 2.43    | 2.43    | 2.43    | 2.44    | 2.44     | 2.44 | 2.44 | 2.44 | 2.44 |
| July   |    | 2.54  | 2.56    | 2.58    | 2.59    | 2.61    | 2.62     | 2.63 | 2.63 | 2.63 | 2.63 |
| 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 |
| 2023 Oct.  | 2  | 2.93  | 2.96    | 2.99    | 3.02    | 3.04    | 3.05     | 3.07 | 3.08 | 3.09 | 3.09 |
|  | 3  | 2.98  | 3.02    | 3.05    | 3.08    | 3.10    | 3.12     | 3.13 | 3.15 | 3.16 | 3.16 |
|  | 4  | 3.03  | 3.07    | 3.10    | 3.13    | 3.15    | 3.17     | 3.18 | 3.19 | 3.20 | 3.21 |
|  | 5  | 3.01  | 3.04    | 3.08    | 3.10    | 3.13    | 3.15     | 3.16 | 3.18 | 3.18 | 3.19 |
|  | 6  | 2.95  | 2.99    | 3.02    | 3.05    | 3.08    | 3.10     | 3.12 | 3.13 | 3.14 | 3.14 |
|  | 9  | 2.90  | 2.94    | 2.97    | 3.00    | 3.03    | 3.05     | 3.07 | 3.08 | 3.09 | 3.10 |
|  | 10 | 2.85  | 2.89    | 2.92    | 2.95    | 2.97    | 3.00     | 3.01 | 3.03 | 3.04 | 3.04 |
|  | 11 | 2.78  | 2.81    | 2.84    | 2.87    | 2.89    | 2.91     | 2.92 | 2.94 | 2.94 | 2.95 |
|  | 12 | 2.79  | 2.82    | 2.85    | 2.87    | 2.90    | 2.91     | 2.93 | 2.94 | 2.94 | 2.95 |
|  | 13 | 2.81  | 2.84    | 2.87    | 2.89    | 2.92    | 2.93     | 2.95 | 2.96 | 2.96 | 2.97 |
|  | 16 | 2.83  | 2.87    | 2.90    | 2.93    | 2.95    | 2.97     | 2.99 | 3.00 | 3.01 | 3.01 |
|  | 17 | 2.86  | 2.89    | 2.92    | 2.95    | 2.97    | 2.99     | 3.00 | 3.02 | 3.02 | 3.03 |
|  | 18 | 2.97  | 3.00    | 3.03    | 3.05    | 3.07    | 3.09     | 3.11 | 3.12 | 3.12 | 3.12 |
|  | 19 | 3.00  | 3.03    | 3.06    | 3.09    | 3.11    | 3.12     | 3.14 | 3.15 | 3.15 | 3.15 |
|  | 20 | 2.98  | 3.01    | 3.05    | 3.07    | 3.10    | 3.11     | 3.13 | 3.14 | 3.15 | 3.15 |
|  | 23 | 3.01  | 3.05    | 3.08    | 3.11    | 3.13    | 3.15     | 3.17 | 3.18 | 3.19 | 3.20 |
|  | 24 | 2.85  | 2.89    | 2.92    | 2.94    | 2.96    | 2.98     | 3.00 | 3.01 | 3.02 | 3.02 |
|  | 25 | 2.91  | 2.95    | 2.98    | 3.01    | 3.03    | 3.05     | 3.07 | 3.08 | 3.09 | 3.09 |
|  | 26 | 2.95  | 2.98    | 3.02    | 3.05    | 3.07    | 3.09     | 3.11 | 3.12 | 3.13 | 3.14 |
|  | 27 | 2.90  | 2.94    | 2.97    | 3.00    | 3.03    | 3.05     | 3.07 | 3.09 | 3.10 | 3.11 |
|  | 30 | 2.87  | 2.91    | 2.95    | 2.98    | 3.01    | 3.04     | 3.06 | 3.08 | 3.09 | 3.10 |
|  | 31 | 2.84  | 2.88    | 2.92    | 2.95    | 2.98    | 3.00     | 3.02 | 3.04 | 3.05 | 3.06 |
| Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments |    |   |         |         |         |         |          |      |      |      |      |
| 2023 Oct.  | 31 | 2.83  | 2.86    | 2.89    | 2.92    | 2.95    | 2.97     | 2.98 | 3.00 | 3.01 | 3.01 |
| Parameters for calculating the term structure of interest rates  |    |   |         |         |         |         |          |      |      |      |      |
|  |    | Beta0   | Beta1   | Beta2   | Beta3   | Tau1    | Tau2     |      |      |      |      |
| 2023 Oct.  | 31 | 1.04268   | 2.27075 | 3.90732 | 6.31426 | 0.54841 | 14.03597 |      |      |      |      |
| Nov.   | 1  | 1.11518   | 2.13005 | 4.01000 | 6.35147 | 0.52406 | 14.29150 |      |      |      |      |
|  | 2  | 1.00398   | 2.37586 | 3.79464 | 6.32487 | 0.54356 | 14.48265 |      |      |      |      |
|  | 3  | 0.98832   | 2.38900 | 3.85466 | 6.30375 | 0.56501 | 14.23206 |      |      |      |      |
|  | 6  | 0.95891   | 2.43285 | 3.83715 | 6.28894 | 0.57274 | 14.15511 |      |      |      |      |

\* 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  | 21      | 22      | 23      | 24      | 25      | 26       | 27   | 28   | 29   | 30   |
| 2012   | 2.29    | 2.30    | 2.30    | 2.30    | 2.29    | 2.28     | 2.26 | 2.25 | 2.23 | 2.20 |
| 2013   | 2.99    | 2.99    | 2.99    | 2.98    | 2.97    | 2.96     | 2.94 | 2.92 | 2.89 | 2.86 |
| 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    | -       | 0.21     | -    | 0.17 | -    | 0.16 |
| 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 |
| 2022 May   | 1.33    | 1.34    | 1.34    | 1.34    | 1.34    | 1.33     | 1.33 | 1.32 | 1.31 | 1.31 |
| June   | 1.72    | 1.72    | 1.72    | 1.71    | 1.71    | 1.70     | 1.69 | 1.67 | 1.66 | 1.64 |
| July   | 1.19    | 1.19    | 1.19    | 1.19    | 1.19    | 1.18     | 1.18 | 1.17 | 1.16 | 1.15 |
| Aug.   | 1.69    | 1.69    | 1.68    | 1.67    | 1.66    | 1.64     | 1.63 | 1.61 | 1.60 | 1.58 |
| Sep.   | 2.16    | 2.15    | 2.14    | 2.13    | 2.12    | 2.11     | 2.10 | 2.09 | 2.08 | 2.07 |
| Oct.   | 2.26    | 2.25    | 2.24    | 2.23    | 2.22    | 2.21     | 2.20 | 2.19 | 2.17 | 2.16 |
| Nov.   | 1.89    | 1.87    | 1.86    | 1.84    | 1.83    | 1.81     | 1.80 | 1.78 | 1.77 | 1.75 |
| Dec.   | 2.53    | 2.52    | 2.50    | 2.48    | 2.47    | 2.45     | 2.43 | 2.41 | 2.39 | 2.36 |
| 2023 Jan.  | 2.31    | 2.30    | 2.28    | 2.26    | 2.24    | 2.22     | 2.20 | 2.18 | 2.16 | 2.13 |
| Feb.   | 2.65    | 2.63    | 2.62    | 2.60    | 2.58    | 2.57     | 2.55 | 2.53 | 2.51 | 2.48 |
| Mar.   | 2.43    | 2.42    | 2.41    | 2.40    | 2.39    | 2.37     | 2.36 | 2.34 | 2.32 | 2.29 |
| Apr.   | 2.44    | 2.44    | 2.45    | 2.45    | 2.45    | 2.46     | 2.46 | 2.46 | 2.46 | 2.46 |
| May  | 2.47    | 2.47    | 2.46    | 2.46    | 2.44    | 2.43     | 2.42 | 2.40 | 2.38 | 2.36 |
| June   | 2.44    | 2.44    | 2.45    | 2.45    | 2.45    | 2.45     | 2.45 | 2.45 | 2.45 | 2.45 |
| July   | 2.63    | 2.62    | 2.62    | 2.61    | 2.60    | 2.58     | 2.57 | 2.56 | 2.54 | 2.52 |
| Aug.   | 2.65    | 2.65    | 2.64    | 2.63    | 2.62    | 2.61     | 2.60 | 2.59 | 2.57 | 2.56 |
| Sep.   | 3.03    | 3.03    | 3.03    | 3.02    | 3.02    | 3.01     | 3.00 | 2.99 | 2.98 | 2.96 |
| Oct.   | 3.07    | 3.07    | 3.07    | 3.07    | 3.06    | 3.06     | 3.05 | 3.04 | 3.03 | 3.02 |
| 2023 Oct. 2  | 3.09    | 3.09    | 3.09    | 3.08    | 3.07    | 3.06     | 3.05 | 3.04 | 3.03 | 3.01 |
| 3  | 3.17    | 3.17    | 3.16    | 3.16    | 3.15    | 3.14     | 3.13 | 3.12 | 3.11 | 3.10 |
| 4  | 3.21    | 3.21    | 3.20    | 3.20    | 3.19    | 3.18     | 3.17 | 3.15 | 3.14 | 3.13 |
| 5  | 3.19    | 3.19    | 3.19    | 3.18    | 3.18    | 3.17     | 3.16 | 3.14 | 3.13 | 3.12 |
| 6  | 3.15    | 3.15    | 3.14    | 3.14    | 3.13    | 3.12     | 3.11 | 3.10 | 3.09 | 3.07 |
| 9  | 3.10    | 3.10    | 3.10    | 3.10    | 3.09    | 3.08     | 3.07 | 3.06 | 3.05 | 3.03 |
| 10   | 3.05    | 3.05    | 3.05    | 3.04    | 3.04    | 3.03     | 3.02 | 3.01 | 2.99 | 2.98 |
| 11   | 2.95    | 2.95    | 2.94    | 2.94    | 2.93    | 2.92     | 2.91 | 2.90 | 2.88 | 2.87 |
| 12   | 2.95    | 2.95    | 2.94    | 2.94    | 2.93    | 2.92     | 2.91 | 2.90 | 2.88 | 2.87 |
| 13   | 2.97    | 2.97    | 2.96    | 2.96    | 2.95    | 2.94     | 2.93 | 2.91 | 2.90 | 2.88 |
| 16   | 3.01    | 3.01    | 3.01    | 3.01    | 3.00    | 2.99     | 2.98 | 2.97 | 2.96 | 2.94 |
| 17   | 3.03    | 3.03    | 3.03    | 3.02    | 3.02    | 3.01     | 3.00 | 2.99 | 2.97 | 2.96 |
| 18   | 3.12    | 3.12    | 3.12    | 3.11    | 3.10    | 3.09     | 3.08 | 3.06 | 3.05 | 3.03 |
| 19   | 3.15    | 3.15    | 3.15    | 3.14    | 3.13    | 3.12     | 3.10 | 3.09 | 3.07 | 3.06 |
| 20   | 3.15    | 3.15    | 3.15    | 3.14    | 3.13    | 3.12     | 3.11 | 3.10 | 3.08 | 3.06 |
| 23   | 3.20    | 3.20    | 3.19    | 3.19    | 3.18    | 3.17     | 3.16 | 3.15 | 3.13 | 3.12 |
| 24   | 3.02    | 3.02    | 3.02    | 3.01    | 3.00    | 2.99     | 2.98 | 2.97 | 2.96 | 2.94 |
| 25   | 3.09    | 3.09    | 3.09    | 3.09    | 3.08    | 3.07     | 3.06 | 3.05 | 3.03 | 3.02 |
| 26   | 3.14    | 3.14    | 3.14    | 3.14    | 3.13    | 3.12     | 3.11 | 3.10 | 3.09 | 3.07 |
| 27   | 3.12    | 3.12    | 3.12    | 3.12    | 3.11    | 3.11     | 3.10 | 3.09 | 3.08 | 3.07 |
| 30   | 3.11    | 3.11    | 3.12    | 3.12    | 3.11    | 3.11     | 3.10 | 3.10 | 3.09 | 3.08 |
| 31   | 3.07    | 3.07    | 3.07    | 3.07    | 3.06    | 3.06     | 3.05 | 3.04 | 3.03 | 3.02 |
| Memo item: yields, derived from the term structure of interest rates, on listed Federal securities with annual coupon payments |         |         |         |         |         |          |      |      |      |      |
| 2023 Oct. 31   | 3.02    | 3.02    | 3.03    | 3.03    | 3.02    | 3.02     | 3.02 | 3.01 | 3.01 | 3.00 |
| Parameters for calculating the term structure of interest rates  |         |         |         |         |         |          |      |      |      |      |
|  | Beta0   | Beta1   | Beta2   | Beta3   | Tau1    | Tau2     |      |      |      |      |
| 2023 Oct. 31   | 1.04268 | 2.27075 | 3.90732 | 6.31426 | 0.54841 | 14.03597 |      |      |      |      |
| Nov. 1   | 1.11518 | 2.13005 | 4.01000 | 6.35147 | 0.52406 | 14.29150 |      |      |      |      |
| 2  | 1.00398 | 2.37586 | 3.79464 | 6.32487 | 0.54356 | 14.48265 |      |      |      |      |
| 3  | 0.98832 | 2.38900 | 3.85466 | 6.30375 | 0.56501 | 14.23206 |      |      |      |      |
| 6  | 0.95891 | 2.43285 | 3.83715 | 6.28894 | 0.57274 | 14.15511 |      |      |      |      |

\* 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 \*

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

% 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   |  |
| 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 |  |
| 2018  | -    | 0.11  | -         | 0.04       | 0.04     | 0.15    | 0.29 | 0.44    | 0.59 | 0.73 |  |
| 2019  | -    | 0.21  | -         | 0.20       | -        | 0.09    | -    | 0.02    | 0.11 | 0.18 |  |
| 2020  | -    | 0.42  | -         | 0.40       | -        | 0.37    | -    | 0.25    | -    | 0.21 |  |
| 2021  | -    | 0.41  | -         | 0.23       | -        | 0.07    | -    | 0.19    | -    | 0.24 |  |
| 2022  | 3.22 | 3.33  | 3.28      | 3.26       | 3.26     | 3.26    | 3.27 | 3.28    | 3.29 | 3.28 |  |
| 2022 May  | 0.52 | 1.01  | 1.25      | 1.39       | 1.48     | 1.57    | 1.64 | 1.70    | 1.77 | 1.82 |  |
| June  | 0.91 | 1.45  | 1.67      | 1.81       | 1.93     | 2.03    | 2.11 | 2.19    | 2.25 | 2.30 |  |
| July  | 0.98 | 1.20  | 1.28      | 1.35       | 1.42     | 1.51    | 1.59 | 1.67    | 1.74 | 1.80 |  |
| Aug.  | 1.78 | 2.11  | 2.18      | 2.21       | 2.24     | 2.29    | 2.33 | 2.38    | 2.41 | 2.44 |  |
| Sep.  | 2.47 | 2.77  | 2.87      | 2.95       | 3.02     | 3.08    | 3.13 | 3.16    | 3.17 | 3.18 |  |
| Oct.  | 2.59 | 2.82  | 2.88      | 2.92       | 2.97     | 3.02    | 3.05 | 3.08    | 3.10 | 3.11 |  |
| Nov.  | 2.82 | 2.85  | 2.83      | 2.81       | 2.80     | 2.79    | 2.78 | 2.78    | 2.77 | 2.77 |  |
| Dec.  | 3.22 | 3.33  | 3.28      | 3.26       | 3.26     | 3.26    | 3.27 | 3.28    | 3.29 | 3.28 |  |
| 2023 Jan.   | 3.34 | 3.29  | 3.15      | 3.08       | 3.05     | 3.04    | 3.05 | 3.05    | 3.06 | 3.07 |  |
| Feb.  | 3.66 | 3.74  | 3.64      | 3.53       | 3.47     | 3.43    | 3.41 | 3.41    | 3.40 | 3.40 |  |
| Mar.  | 3.63 | 3.48  | 3.36      | 3.29       | 3.26     | 3.24    | 3.23 | 3.23    | 3.22 | 3.22 |  |
| Apr.  | 3.83 | 3.55  | 3.38      | 3.29       | 3.26     | 3.24    | 3.23 | 3.23    | 3.24 | 3.24 |  |
| May   | 3.87 | 3.61  | 3.36      | 3.24       | 3.19     | 3.17    | 3.17 | 3.17    | 3.18 | 3.18 |  |
| June  | 4.07 | 3.93  | 3.69      | 3.51       | 3.41     | 3.34    | 3.31 | 3.29    | 3.27 | 3.26 |  |
| July  | 4.08 | 3.80  | 3.57      | 3.45       | 3.38     | 3.35    | 3.34 | 3.33    | 3.33 | 3.33 |  |
| Aug.  | 4.03 | 3.74  | 3.52      | 3.41       | 3.35     | 3.33    | 3.32 | 3.32    | 3.33 | 3.33 |  |
| Sep.  | 4.18 | 3.90  | 3.73      | 3.66       | 3.63     | 3.62    | 3.63 | 3.63    | 3.64 | 3.65 |  |
| Oct.  | 4.03 | 3.72  | 3.55      | 3.49       | 3.49     | 3.52    | 3.55 | 3.59    | 3.61 | 3.64 |  |
| 2023 Oct. 2   | 4.17 | 3.88  | 3.72      | 3.65       | 3.63     | 3.63    | 3.64 | 3.65    | 3.65 | 3.66 |  |
| 3   | 4.18 | 3.89  | 3.73      | 3.67       | 3.65     | 3.65    | 3.66 | 3.67    | 3.68 | 3.69 |  |
| 4   | 4.18 | 3.92  | 3.76      | 3.70       | 3.70     | 3.71    | 3.72 | 3.74    | 3.75 | 3.76 |  |
| 5   | 4.15 | 3.88  | 3.72      | 3.66       | 3.66     | 3.67    | 3.69 | 3.71    | 3.72 | 3.74 |  |
| 6   | 4.14 | 3.86  | 3.69      | 3.63       | 3.63     | 3.64    | 3.67 | 3.69    | 3.70 | 3.72 |  |
| 9   | 4.12 | 3.83  | 3.66      | 3.60       | 3.60     | 3.61    | 3.64 | 3.66    | 3.68 | 3.69 |  |
| 10  | 4.11 | 3.80  | 3.62      | 3.55       | 3.54     | 3.56    | 3.59 | 3.61    | 3.63 | 3.65 |  |
| 11  | 4.11 | 3.80  | 3.61      | 3.53       | 3.52     | 3.53    | 3.55 | 3.57    | 3.59 | 3.61 |  |
| 12  | 4.11 | 3.82  | 3.64      | 3.56       | 3.53     | 3.53    | 3.54 | 3.55    | 3.56 | 3.57 |  |
| 13  | 4.13 | 3.84  | 3.65      | 3.57       | 3.54     | 3.54    | 3.55 | 3.56    | 3.57 | 3.59 |  |
| 16  | 4.14 | 3.85  | 3.67      | 3.59       | 3.57     | 3.57    | 3.58 | 3.59    | 3.60 | 3.62 |  |
| 17  | 4.14 | 3.87  | 3.69      | 3.61       | 3.59     | 3.59    | 3.60 | 3.61    | 3.63 | 3.64 |  |
| 18  | 4.15 | 3.91  | 3.75      | 3.67       | 3.65     | 3.66    | 3.67 | 3.68    | 3.69 | 3.70 |  |
| 19  | 4.17 | 3.93  | 3.78      | 3.72       | 3.70     | 3.71    | 3.72 | 3.73    | 3.74 | 3.75 |  |
| 20  | 4.11 | 3.91  | 3.78      | 3.71       | 3.68     | 3.68    | 3.69 | 3.71    | 3.74 | 3.76 |  |
| 23  | 4.10 | 3.89  | 3.76      | 3.70       | 3.68     | 3.68    | 3.70 | 3.73    | 3.76 | 3.79 |  |
| 24  | 4.06 | 3.84  | 3.70      | 3.63       | 3.59     | 3.59    | 3.60 | 3.63    | 3.65 | 3.68 |  |
| 25  | 4.06 | 3.84  | 3.70      | 3.63       | 3.60     | 3.60    | 3.62 | 3.65    | 3.68 | 3.71 |  |
| 26  | 4.07 | 3.84  | 3.70      | 3.64       | 3.61     | 3.62    | 3.64 | 3.67    | 3.71 | 3.74 |  |
| 27  | 4.03 | 3.77  | 3.62      | 3.55       | 3.53     | 3.54    | 3.57 | 3.60    | 3.64 | 3.68 |  |
| 30  | 4.04 | 3.72  | 3.55      | 3.50       | 3.51     | 3.54    | 3.57 | 3.60    | 3.63 | 3.65 |  |
| 31  | 4.03 | 3.72  | 3.55      | 3.49       | 3.49     | 3.52    | 3.55 | 3.59    | 3.61 | 3.64 |  |
| Memo item: yields, derived from the term of structure of interest rates, on Pfandbriefe with annual coupon payments |      |   |           |            |          |         |      |         |      |      |  |
| 2023 Oct. 31  | 4.03 | 3.73  | 3.56      | 3.50       | 3.50     | 3.52    | 3.55 | 3.58    | 3.61 | 3.63 |  |
| Parameters for calculating the term structure of interest rates   |      |   |           |            |          |         |      |         |      |      |  |
|   |      | Beta0   | Beta1     | Beta2      | Beta3    | Tau1    |      | Tau2    |      |      |  |
| 2023 Oct. 31  |      | 3.87998   | 0.29982   | - 6.34372  | 5.43388  | 1.19678 |      | 0.88432 |      |      |  |
| Nov. 1  |      | 3.88373   | 0.44196   | - 17.00133 | 15.77006 | 1.12482 |      | 1.02959 |      |      |  |
| 2   |      | 3.82237   | - 0.63870 | - 2.70297  | 4.82688  | 1.20924 |      | 0.35304 |      |      |  |
| 3   |      | 3.78408   | - 0.94642 | - 1.58085  | 5.15413  | 1.50925 |      | 0.29726 |      |      |  |
| 6   |      | 3.85733   | - 1.36528 | 0.02427    | 5.84730  | 4.31633 |      | 0.26884 |      |      |  |

\* Interest rates on (theoretical) zero coupon bonds, 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.

II. 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

|   |         | 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   |
| 2012  |         | .   | .       | .       | .        | .        | .       | .       | .       | .    | .    |
| 2013  |         | .   | .       | .       | .        | .        | .       | .       | .       | .    | .    |
| 2014  |         | .   | .       | .       | .        | .        | .       | .       | .       | .    | .    |
| 2015  |         | .   | .       | .       | .        | .        | .       | .       | .       | .    | .    |
| 2016  |         | .   | .       | .       | .        | .        | .       | .       | .       | .    | .    |
| 2017  |         | 1.05  | 1.15    | 1.24    | 1.32     | 1.39     | 1.46    | 1.52    | 1.57    | 1.62 | 1.67 |
| 2018  |         | 1.07  | 1.17    | 1.25    | 1.32     | 1.38     | 1.44    | 1.49    | 1.54    | 1.58 | 1.62 |
| 2019  |         | 0.36  | 0.41    | 0.47    | 0.52     | 0.57     | 0.62    | 0.66    | 0.71    | 0.76 | 0.81 |
| 2020  |         | –   | 0.09    | –       | 0.05     | –        | 0.01    | 0.04    | 0.08    | 0.13 | 0.22 |
| 2021  |         | 0.41  | 0.46    | 0.52    | 0.58     | 0.63     | 0.69    | 0.74    | 0.79    | 0.84 | 0.89 |
| 2022  |         | 3.28  | 3.27    | 3.26    | 3.25     | 3.23     | 3.21    | 3.19    | 3.17    | 3.15 | 3.13 |
| 2022  | May     | 1.87  | 1.92    | 1.96    | 1.99     | 2.02     | 2.05    | 2.07    | 2.10    | 2.12 | 2.13 |
|   | June    | 2.35  | 2.39    | 2.43    | 2.46     | 2.48     | 2.51    | 2.53    | 2.55    | 2.57 | 2.58 |
|   | July    | 1.85  | 1.90    | 1.94    | 1.97     | 2.00     | 2.03    | 2.05    | 2.08    | 2.09 | 2.11 |
|   | Aug.    | 2.47  | 2.50    | 2.52    | 2.54     | 2.55     | 2.57    | 2.58    | 2.59    | 2.60 | 2.61 |
|   | Sep.    | 3.18  | 3.18    | 3.17    | 3.16     | 3.14     | 3.13    | 3.12    | 3.10    | 3.09 | 3.07 |
|   | Oct.    | 3.12  | 3.12    | 3.12    | 3.11     | 3.10     | 3.09    | 3.08    | 3.07    | 3.05 | 3.04 |
|   | Nov.    | 2.77  | 2.77    | 2.77    | 2.76     | 2.76     | 2.76    | 2.76    | 2.76    | 2.76 | 2.76 |
|   | Dec.    | 3.28  | 3.27    | 3.26    | 3.25     | 3.23     | 3.21    | 3.19    | 3.17    | 3.15 | 3.13 |
| 2023  | Jan.    | 3.08  | 3.08    | 3.08    | 3.07     | 3.07     | 3.06    | 3.05    | 3.03    | 3.02 | 3.00 |
|   | Feb.    | 3.40  | 3.40    | 3.40    | 3.40     | 3.39     | 3.38    | 3.37    | 3.35    | 3.34 | 3.32 |
|   | Mar.    | 3.22  | 3.21    | 3.21    | 3.21     | 3.20     | 3.20    | 3.19    | 3.18    | 3.17 | 3.16 |
|   | Apr.    | 3.24  | 3.24    | 3.25    | 3.25     | 3.25     | 3.24    | 3.24    | 3.24    | 3.23 | 3.22 |
|   | May     | 3.19  | 3.19    | 3.20    | 3.20     | 3.20     | 3.21    | 3.21    | 3.21    | 3.21 | 3.21 |
|   | June    | 3.25  | 3.24    | 3.24    | 3.23     | 3.23     | 3.22    | 3.22    | 3.22    | 3.21 | 3.21 |
|   | July    | 3.33  | 3.33    | 3.33    | 3.33     | 3.34     | 3.34    | 3.34    | 3.34    | 3.34 | 3.34 |
|   | Aug.    | 3.34  | 3.35    | 3.35    | 3.36     | 3.36     | 3.37    | 3.37    | 3.37    | 3.38 | 3.38 |
|   | Sep.    | 3.66  | 3.67    | 3.68    | 3.69     | 3.69     | 3.70    | 3.70    | 3.71    | 3.71 | 3.72 |
|   | Oct.    | 3.66  | 3.68    | 3.69    | 3.71     | 3.72     | 3.73    | 3.74    | 3.75    | 3.75 | 3.76 |
| 2023  | Oct. 2  | 3.67  | 3.68    | 3.68    | 3.69     | 3.69     | 3.70    | 3.70    | 3.70    | 3.71 | 3.71 |
|   | 3       | 3.69  | 3.70    | 3.71    | 3.71     | 3.71     | 3.72    | 3.72    | 3.72    | 3.73 | 3.73 |
|   | 4       | 3.77  | 3.78    | 3.78    | 3.79     | 3.79     | 3.80    | 3.80    | 3.80    | 3.81 | 3.81 |
|   | 5       | 3.75  | 3.76    | 3.77    | 3.78     | 3.78     | 3.79    | 3.79    | 3.80    | 3.80 | 3.80 |
|   | 6       | 3.73  | 3.74    | 3.75    | 3.76     | 3.77     | 3.77    | 3.78    | 3.78    | 3.79 | 3.79 |
|   | 9       | 3.71  | 3.72    | 3.73    | 3.74     | 3.75     | 3.75    | 3.76    | 3.76    | 3.77 | 3.77 |
|   | 10      | 3.66  | 3.67    | 3.68    | 3.69     | 3.70     | 3.71    | 3.71    | 3.72    | 3.72 | 3.73 |
|   | 11      | 3.62  | 3.63    | 3.64    | 3.65     | 3.66     | 3.67    | 3.67    | 3.68    | 3.68 | 3.69 |
|   | 12      | 3.58  | 3.59    | 3.60    | 3.60     | 3.61     | 3.61    | 3.62    | 3.62    | 3.63 | 3.63 |
|   | 13      | 3.60  | 3.61    | 3.62    | 3.62     | 3.63     | 3.64    | 3.64    | 3.65    | 3.65 | 3.66 |
|   | 16      | 3.63  | 3.63    | 3.64    | 3.65     | 3.65     | 3.66    | 3.66    | 3.67    | 3.67 | 3.67 |
|   | 17      | 3.65  | 3.66    | 3.67    | 3.67     | 3.68     | 3.69    | 3.69    | 3.70    | 3.70 | 3.70 |
|   | 18      | 3.71  | 3.72    | 3.73    | 3.73     | 3.74     | 3.74    | 3.75    | 3.75    | 3.75 | 3.76 |
|   | 19      | 3.76  | 3.77    | 3.77    | 3.78     | 3.78     | 3.79    | 3.79    | 3.80    | 3.80 | 3.80 |
|   | 20      | 3.79  | 3.81    | 3.83    | 3.85     | 3.86     | 3.86    | 3.87    | 3.87    | 3.86 | 3.86 |
|   | 23      | 3.82  | 3.85    | 3.87    | 3.88     | 3.89     | 3.90    | 3.90    | 3.90    | 3.90 | 3.89 |
|   | 24      | 3.71  | 3.74    | 3.76    | 3.78     | 3.79     | 3.80    | 3.80    | 3.81    | 3.80 | 3.80 |
|   | 25      | 3.74  | 3.77    | 3.79    | 3.81     | 3.82     | 3.83    | 3.84    | 3.84    | 3.83 | 3.83 |
|   | 26      | 3.77  | 3.80    | 3.82    | 3.84     | 3.85     | 3.86    | 3.87    | 3.86    | 3.86 | 3.85 |
|   | 27      | 3.72  | 3.75    | 3.78    | 3.80     | 3.81     | 3.82    | 3.83    | 3.83    | 3.82 | 3.82 |
|   | 30      | 3.67  | 3.69    | 3.70    | 3.71     | 3.72     | 3.73    | 3.74    | 3.75    | 3.75 | 3.76 |
|   | 31      | 3.66  | 3.68    | 3.69    | 3.71     | 3.72     | 3.73    | 3.74    | 3.75    | 3.75 | 3.76 |
| Memo item: yields, derived from the term of structure of interest rates, on Pfandbriefe with annual coupon payments |         |   |         |         |          |          |         |         |         |      |      |
| 2023  | Oct. 31 | 3.65  | 3.66    | 3.68    | 3.69     | 3.70     | 3.70    | 3.71    | 3.72    | 3.73 | 3.73 |
| Parameters for calculating the term structure of interest rates   |         |   |         |         |          |          |         |         |         |      |      |
|   |         | Beta0   | Beta1   | Beta2   | Beta3    | Tau1     | Tau2    |         |         |      |      |
| 2023  | Oct. 31 | 3.87998   | 0.29982 | –       | 6.34372  | 5.43388  | 1.19678 | 0.88432 |         |      |      |
|   | Nov. 1  | 3.88373   | 0.44196 | –       | 17.00133 | 15.77006 | 1.12482 | 1.02959 |         |      |      |
|   | 2       | 3.82237   | –       | 0.63870 | –        | 2.70297  | 4.82688 | 1.20924 | 0.35304 |      |      |
|   | 3       | 3.78408   | –       | 0.94642 | –        | 1.58085  | 5.15413 | 1.50925 | 0.29726 |      |      |
|   | 6       | 3.85733   | –       | 1.36528 | –        | 0.02427  | 5.84730 | 4.31633 | 0.26884 |      |      |

\* Interest rates on (theoretical) zero coupon bonds, 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 issued by residents with a maximum maturity according to the terms of issue of over four years. Structured Products and the like, debt securities with unscheduled redemptions, zero coupon bonds, floating rate notes and bonds not denominated in Euro 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 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 estimates 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  $z(T, \beta, \nu)$  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  $(\tau_1, \tau_2)$  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.