

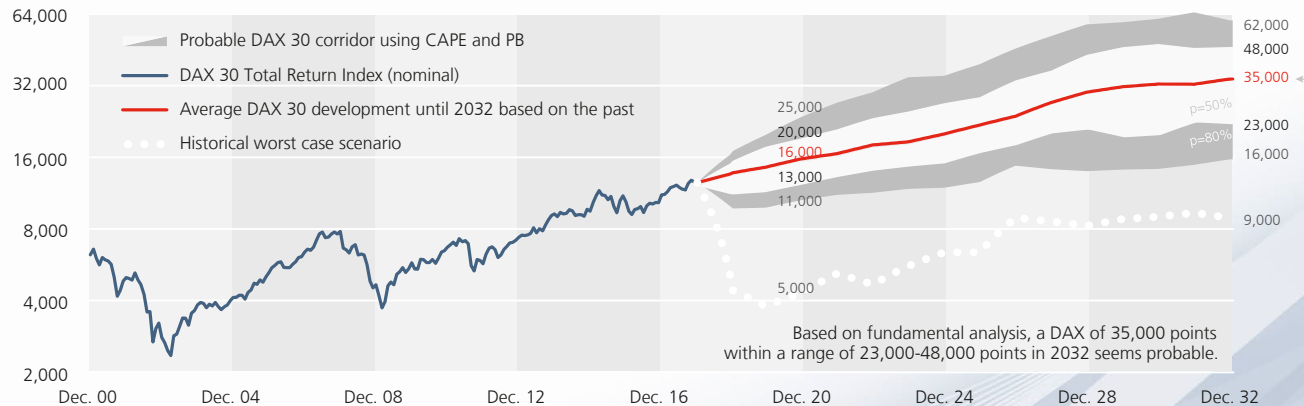
# Valuation based long-term return potential of the DAX 30

## Which returns followed on comparable CAPE and PB valuations in 17 countries since 1881?

At the current valuation (CAPE 20.6, PB 1.9) the following returns were historically observed over 1-15 years

| Years | Subsequent returns based on CAPE |              |               |              |               | Subsequent returns based on PB |              |               |       |               | CAPE and PB forecast |               |
|-------|----------------------------------|--------------|---------------|--------------|---------------|--------------------------------|--------------|---------------|-------|---------------|----------------------|---------------|
|       | Max                              | 75%          | <u>Median</u> | 25%          | Min           | Max                            | 75%          | <u>Median</u> | 25%   | Min           | <u>Q Median</u>      | DAX 30        |
| 1     | 95.8%                            | 20.8%        | 7.6%          | <b>-9.1%</b> | -56.4%        | <b>95.8%</b>                   | <b>21.2%</b> | 9.4%          | -4.2% | <b>-65.3%</b> | 8.5%                 | 14,000        |
| 2     | 49.2%                            | <b>18.0%</b> | 6.1%          | <b>-4.1%</b> | <b>-46.0%</b> | <b>62.7%</b>                   | 16.6%        | 7.5%          | -1.0% | -45.8%        | 6.8%                 | 15,000        |
| 3     | <b>44.1%</b>                     | <b>14.4%</b> | 6.7%          | <b>-0.7%</b> | <b>-30.9%</b> | 44.1%                          | 14.4%        | 7.2%          | 1.3%  | -30.4%        | 7.0%                 | <b>16,000</b> |
| 4     | <b>36.9%</b>                     | 12.7%        | 5.8%          | <b>1.1%</b>  | <b>-20.7%</b> | 36.9%                          | <b>12.8%</b> | 6.7%          | 1.9%  | -19.4%        | 6.3%                 | 17,000        |
| 5     | 32.9%                            | 11.0%        | 5.9%          | <b>1.9%</b>  | -16.4%        | <b>33.1%</b>                   | <b>12.3%</b> | 7.2%          | 2.4%  | <b>-18.9%</b> | 6.6%                 | 19,000        |
| 6     | <b>35.1%</b>                     | 9.6%         | 5.2%          | <b>2.1%</b>  | -11.8%        | 27.8%                          | <b>11.2%</b> | 6.4%          | 2.2%  | <b>-13.6%</b> | 5.8%                 | 19,000        |
| 7     | 30.0%                            | 9.4%         | 5.5%          | <b>2.1%</b>  | <b>-10.2%</b> | <b>37.5%</b>                   | <b>10.6%</b> | 6.4%          | 2.8%  | -9.9%         | 6.0%                 | 21,000        |
| 8     | 22.1%                            | 8.6%         | 5.5%          | <b>3.0%</b>  | <b>-9.1%</b>  | <b>24.9%</b>                   | <b>9.9%</b>  | 7.0%          | 3.8%  | -6.4%         | 6.2%                 | 23,000        |
| 9     | 18.0%                            | 8.8%         | 5.6%          | <b>3.4%</b>  | -4.0%         | <b>28.4%</b>                   | <b>10.6%</b> | 7.2%          | 4.4%  | <b>-4.7%</b>  | 6.4%                 | 25,000        |
| 10    | <b>23.3%</b>                     | 9.4%         | 6.3%          | <b>4.1%</b>  | -4.3%         | 22.5%                          | <b>10.4%</b> | 7.8%          | 5.0%  | <b>-4.7%</b>  | 7.1%                 | 28,000        |
| 11    | <b>21.5%</b>                     | 9.1%         | 6.5%          | <b>4.0%</b>  | <b>-4.7%</b>  | 18.4%                          | <b>10.9%</b> | 8.0%          | 5.5%  | -4.1%         | 7.3%                 | 31,000        |
| 12    | 21.8%                            | 8.5%         | 6.3%          | <b>2.9%</b>  | -3.3%         | <b>22.9%</b>                   | <b>10.5%</b> | 7.8%          | 5.2%  | <b>-3.9%</b>  | 7.0%                 | 33,000        |
| 13    | <b>20.7%</b>                     | 7.9%         | 5.8%          | <b>2.8%</b>  | -2.5%         | 20.2%                          | <b>9.9%</b>  | 7.4%          | 5.2%  | <b>-3.5%</b>  | 6.6%                 | 34,000        |
| 14    | 19.9%                            | 7.7%         | 5.6%          | <b>3.4%</b>  | -2.6%         | <b>19.9%</b>                   | <b>8.8%</b>  | 6.5%          | 4.7%  | <b>-3.1%</b>  | 6.0%                 | 33,000        |
| 15    | 14.5%                            | 7.1%         | 5.4%          | <b>3.0%</b>  | -2.1%         | <b>15.8%</b>                   | <b>8.1%</b>  | 6.4%          | 5.0%  | <b>-3.2%</b>  | 5.9%                 | <b>35,000</b> |

As of 31/12/2017, the German stock market had a CAPE of 20.6 and a PB of 1.9. The table shows the average subsequent returns (which followed a comparable valuation worldwide) over 1 to 15 years. All figures in local currency, incl. dividends and inflation-adjusted. The DAX 30 forecast of the last column assume an inflation rate of 1% p.a.



The diagram shows the average returns which followed a comparable valuation worldwide over 1 to 15 years (red). The light grey corridor (p=50%) reflects 50% of all observed values, the dark grey 80% of all observed values. The worst case scenario corresponds to the lowest return following a comparable valuation. The calculation assumes an inflation rate of 1% p.a.

The lower chart shows the probable DAX 30 development and includes the observed returns from the table, which are used as a stock market forecast until 2032. For each time horizon from 1-15 years, the corridor is calculated using the more conservative return forecast based on CAPE and PB, which are highlighted (bold) in the table. The red line shows the average of the median subsequent returns using CAPE and PB.

The light grey corridor reflects 50% of all observed returns, the dark grey 80%. The worst case scenario corresponds to the lowest observed return for a comparable valuation in 16 MSCI Country Indices from 1979-2015 and in the S&P 500 from 1881-2015.

For more details, see StarCapital Research paper "**Predicting Stock Market Returns Using the Shiller-CAPE: An Improvement Towards Traditional Value Indicators?**".