# Deutsche Börse Indices – Extended Market Consultation
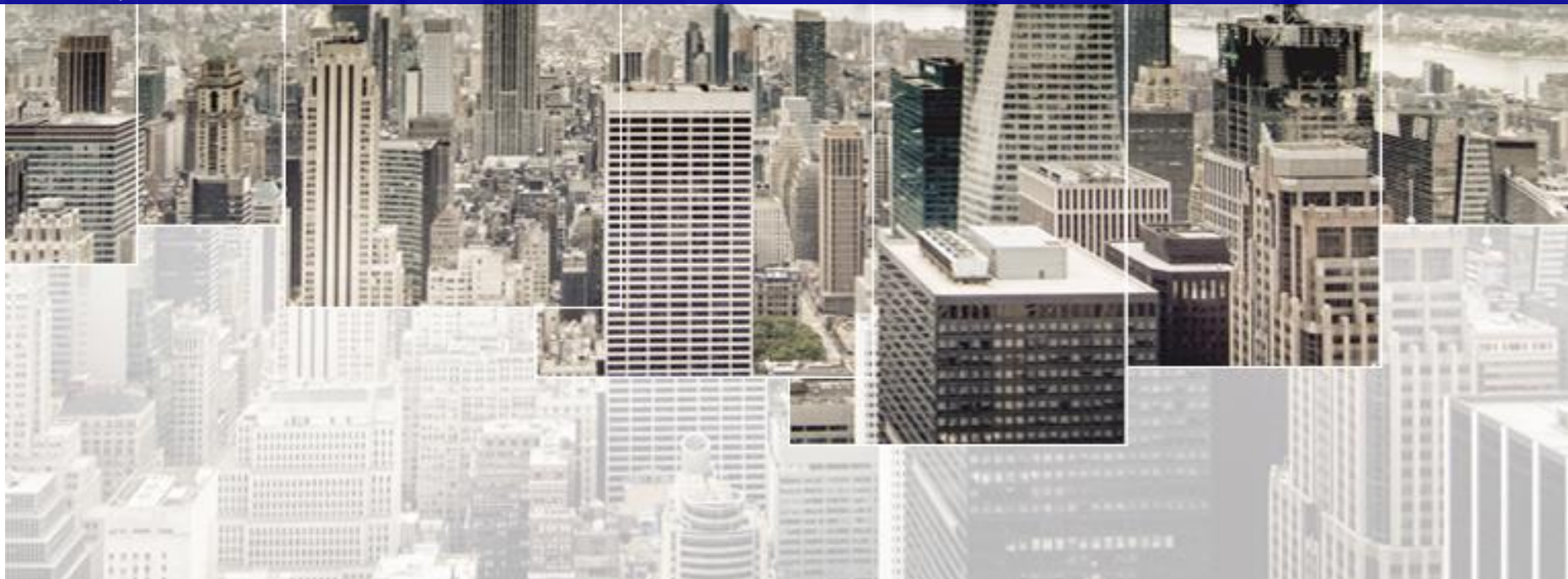
Considered Methodology Change for MDAX, SDAX and TecDAX

19th April, 2018

# 1.

## Introduction

# Deutsche Börse considers a methodology changes to the MDAX, SDAX and TecDAX

## Current methodology

- **Horizontal separation** between "Classic" and "Tech" companies for selection indices "below" the DAX[1)]

  - MDAX/SDAX contain only firms classified as "Classic". Companies classified as "Tech" are currently not eligible

  - No dual membership allowed

- **Vertical separation** among Tech companies

  - TecDAX only includes tech companies "below" the DAX
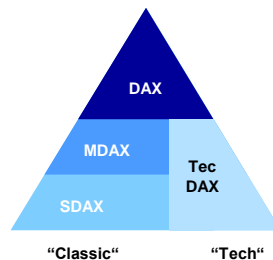
## Considered future methodology

- **Removal of horizontal separation** to let „Tech" companies join the MDAX and SDAX in order to offer consistent, i.e. cross-industry mid and small cap indices

- **Removal of vertical separation** to let Tech companies as part of the DAX index join the TecDAX in order to offer a consistent tech index without small / mid cap bias

- **Extension of number of components** selected into the

  - MDAX/SDAX from currently 50 to 60 (MDAX/SDAX) [Alt. 1]

  - MDAX/SDAX from currently 50 to 60 (MDAX) / 70 (SDAX) [Alt. 2]

  - MDAX/SDAX from currently 50 to 70 (MDAX) / 70 (SDAX) [Alt. 3]

  - TecDAX from currently 30 to 40
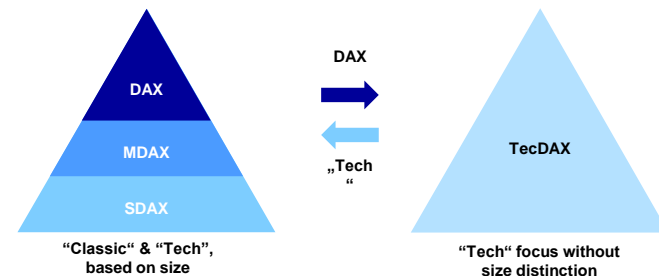


1) For the allocation of sectors to the segments "Classic" and "Tech", please refer to the Appendix or Chapter 9.5 in the "Guide to the Equity Indices of Deutsche Börse".

# Rationale driving considered rule-change for MDAX, SDAX and TecDAX

**Evaluation of removing the artificial separation between "Tech"/"Classic"**

**International standard**

- Existing size indices typically do not distinguish between "Tech" and "Classic" (i.e. non-tech)

**Increased coverage**

- Due to extension of eligible universe, the coverage of MDAX and SDAX would be significantly increased (i.e. both indices would become broad size indices)

# 2.

## Potential changes in detail

# Considered rule changes in detail

## MDAX/SDAX:

- **Removal of horizontal separation:** include „Tech" companies in MDAX and SDAX

  - The underlying universe considered for the composition of the MDAX and SDAX would be extended to include all stocks listed in the Deutsche Börse Prime Standard, irrespective of whether they are classified as „Classic" or „Tech"

  - The selection process and review frequency would remain unchanged. Hence, companies would be selected based upon their free-float market capitalization and 12-month-turnover

  - In order to address a crowding out effect of current MDAX and SDAX components due to the now extended universe (tech companies would push out MDAX/ SDAX members), the number of companies per index would be increased from currently 50 to

    (a) 60 for MDAX and SDAX [Alt. 1]

    (b) 60 for MDAX and 70 for SDAX [Alt. 2]

    (c) 70 for MDAX and 70 for SDAX [Alt. 3]

## TecDAX:

- **Removal of vertical separation:** Include "Tech" companies from DAX in TecDAX

  - The underlying universe considered for the composition of the TecDAX would be extended to also include tech companies from the entire Prime Standard segment, which includes current DAX members

  - The selection process, review frequency and number of companies selected into the index would remain unchanged

  - In order to address a crowding out effect of current TecDAX components due to the inclusion of DAX companies, the number of TecDAX companies may be increased from currently 30 to 40.

# Current and considered regular and fast entry / exit rules (MDAX, SDAX)[1]

| Scenario | (1) | | (2) | | (3) | | (4) | |
|---|---|---|---|---|---|---|---|---|
| Rank | Rank candidate FF-Mcap/ Trading Value | Rank alternate candidate FF-Mcap/ Trading Value | Rank candidate FF-Mcap/ Trading Value | Rank alternate candidate FF-Mcap/ Trading Value | Rank candidate FF-Mcap/ Trading Value | Rank alternate candidate FF-Mcap/ Trading Value | Rank candidate FF-Mcap/ Trading Value | Rank alternate candidate FF-Mcap/ Trading Value |
| Index | MDAX 50 | | MDAX 60 | | MDAX 60 | | MDAX 70 | |
| Fast Exit | 65/65 | 55/55;55/60;55/65 | 75/75 | 65/65;65/70;65/75 | 75/75 | 65/65;65/70;65/75 | 85/85 | 75/75;75/80;75/85 |
| Fast Entry | 45/45 | 55/55 | 55/55 | 65/65 | 55/55 | 65/65 | 65/65 | 75/75 |
| Regular Exit | 60/60 | 55/55 | 70/70 | 65/65 | 70/70 | 65/65 | 80/80 | 75/75 |
| Regular Entry | 50/50 | 55/55 | 60/60 | 65/65 | 60/60 | 65/65 | 70/70 | 75/75 |
| Index | SDAX 50 | | SDAX 60 | | SDAX 70 | | SDAX 70 | |
| Fast Exit | 115/115 | 105/105; 105/110;105/115 | 135/135 | 125/125;125/130; 125/135 | 145/145 | 135/135;135/140; 135/145 | 155/155 | 145/145;145/150; 145/155 |
| Fast Entry | 95/95 | 105/105 | 115/115 | 125/125 | 125/125 | 135/135 | 155/135 | 145/145 |
| Regular Exit | 110/110 | 105/105 | 130/130 | 125/125 | 140/140 | 135/135 | 150/150 | 145/145 |
| Regular Entry | 100/100 | 105/105 | 120/120 | 125/125 | 130/130 | 135/135 | 140/140 | 145/145 |

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1)  The stated ranks refer to the fast and regular entry and exit rules described in chapter 4.1.1.3 of the Guide to the Equity Indices of Deutsche Boerse available on www.dax-indices.com (hereinafter referred to as "Equity Indices Guide").

# Current and considered regular and fast entry / exit rules (TecDAX)[1]

| Rank | Rank candidate FF-Mcap/ Trading Value | Rank alternate candidate FF-Mcap/ Trading Value | Rank candidate FF-Mcap/ Trading Value | Rank alternate candidate FF-Mcap/ Trading Value |
|---|---|---|---|---|
| Index | TecDAX 30 | | TecDAX 40 | |
| Fast Exit | 45/45 | 35/35;35/40;35/45 | 55/55 | 45/45;45/50;45/55 |
| Fast Entry | 25/25 | 35/35 | 35/35 | 45/45 |
| Regular Exit | 40/40 | 35/35 | 50/50 | 45/45 |
| Regular Entry | 30/30 | 35/35 | 40/40 | 45/45 |

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1) The stated ranks refer to the fast and regular entry and exit rules described in chapter 4.1.1.3 of the Guide to the Equity Indices of Deutsche Boerse available on www.dax-indices.com (hereinafter referred to as "Equity Indices Guide").

# 3.

## Impact on derived index concepts

# Overview of indices derived from MDAX, SDAX or TecDAX (I)

| Class | Index | Launch Date | Base Date | Underlying Index Universe | Impact[1] |
|-------|-------|-------------|-----------|---------------------------|-----------|
| Benchmark | HDAX (PR) EUR | 11.04.1994 | 30.12.1987 | DAX, MDAX, TecDAX | Old:<br>DAX 30 + MDAX 50 + TecDAX 30<br><br>New:<br>(1) DAX 30 + MDAX **[N]** + TecDAX **[N]** – overlap (TecDAX/MDAX)<br><br>(2) DAX 30 + MDAX **[N]** + TecDAX **[N]** – overlap (TecDAX/MDAX) |
| Benchmark | HDAX (TR) EUR | 11.04.1994 | 30.12.1987 | DAX, MDAX, TecDAX | |
| Benchmark | HDAX (PR) USD | 08.05.2015 | 03.01.2000 | DAX, MDAX, TecDAX | |
| Benchmark | HDAX (TR) USD | 19.08.2014 | 31.12.2002 | DAX, MDAX, TecDAX | |
| Benchmark | HDAX (PR) CHF | 08.05.2015 | 03.01.2000 | DAX, MDAX, TecDAX | |
| Benchmark | HDAX (TR) CHF | 08.05.2015 | 03.01.2000 | DAX, MDAX, TecDAX | |
| Hedged | HDAX Monthly Hedged (PR) CHF | 08.05.2015 | 30.12.1999 | DAX, MDAX, TecDAX | |
| Hedged | HDAX Monthly Hedged (TR) CHF | 08.05.2015 | 30.12.1999 | DAX, MDAX, TecDAX | |
| Hedged | HDAX Monthly Hedged (PR) USD | 08.05.2015 | 30.12.1999 | DAX, MDAX, TecDAX | |
| Hedged | HDAX Hedged (TR) USD | 19.08.2014 | 31.12.2002 | DAX, MDAX, TecDAX | |
| Strategy | DAXplus® Maximum Dividend (PR) EUR | 23.03.2009 | 21.05.1999 | DAX, MDAX, TecDAX | |
| Strategy | DAXplus® Maximum Dividend (TR) EUR | 23.03.2009 | 21.05.1999 | DAX, MDAX, TecDAX | |
| Strategy | DAXplus® Export Strategy (PR) EUR | 24.10.2005 | 18.03.2002 | DAX, MDAX | Addition of **[M]** places (MDAX **[N]**), change in MDAX composition |
| Strategy | DAXplus® Export Strategy (TR) EUR | 24.10.2005 | 18.03.2002 | DAX, MDAX | |
| Strategy | DivMSDAX (PR) EUR | 16.05.2011 | 17.09.1999 | MDAX, SDAX | Addition of **M** places (MDAX **[N]**, SDAX **[N]**), change in MDAX/SDAX composition |
| Strategy | DivMSDAX (TR) EUR | 16.05.2011 | 17.09.1999 | MDAX, SDAX | |
| Strategy | Midcap Market Index (PR) EUR | 24.03.2003 | 30.12.1997 | MDAX, TecDAX | Addition of **M** places (MDAX **[N]**), change in MDAX composition, reduction by overlap between MDAX and TecDAX |
| Strategy | Midcap Market Index (TR) EUR | 24.03.2003 | 30.12.1997 | MDAX, TecDAX | |

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1) The placeholder [M] hereby refers to the number of additional places per index whereby the placeholder [N] refers to the number of companies per index in correspondence with the alternatives described above. E.g. MDAX 60 → M =10, N = 60.

# Overview of indices derived from MDAX, SDAX or TecDAX (II)

| Class | Index | Launch Date | Base Date | Underlying Index Universe | Impact[1] |
|-------|-------|-------------|-----------|---------------------------|-----------|
| Strategy | ShortMDAX (PR) EUR | 28.08.2014 | 29.12.2006 | MDAX | Addition of **[M]** places (MDAX **[N]**), Change in MDAX composition |
| Strategy | ShortMDAX (TR) EUR | 28.08.2014 | 29.12.2006 | MDAX | |
| Strategy | ShortTecDAX (TR) EUR | 10.01.2010 | 29.12.2006 | TecDAX | Addition of **[M]** places (TecDAX **[N]**), Change in TecDAX Composition |
| Strategy | ShortTecDAX (PR) EUR | 21.03.2011 | 29.12.2006 | TecDAX | |
| Strategy | ShortTecDAX AR (PR) EUR | 25.02.2013 | 30.12.2011 | TecDAX | |
| Strategy | ShortTecDAX AR (TR) EUR | 25.02.2013 | 30.12.2011 | TecDAX | |
| Calculation hours | X-MDAX (TR) EUR | 03.12.2007 | 30.12.1987 | MDAX | Addition of [**M**] places (MDAX **[N]**), Change in MDAX composition |
| Calculation hours | L/E-MDAX® (TR) EUR | 03.11.2003 | 30.12.1987 | MDAX | |
| Calculation hours | X-TecDAX (TR) EUR | 03.12.2007 | 30.12.1987 | TecDAX | Addition of **[M]** places (TecDAX **[N]**), Change in TecDAX composition |
| Calculation hours | L/E-TecDAX® (TR) EUR | 03.11.2003 | 30.12.1987 | TecDAX | |

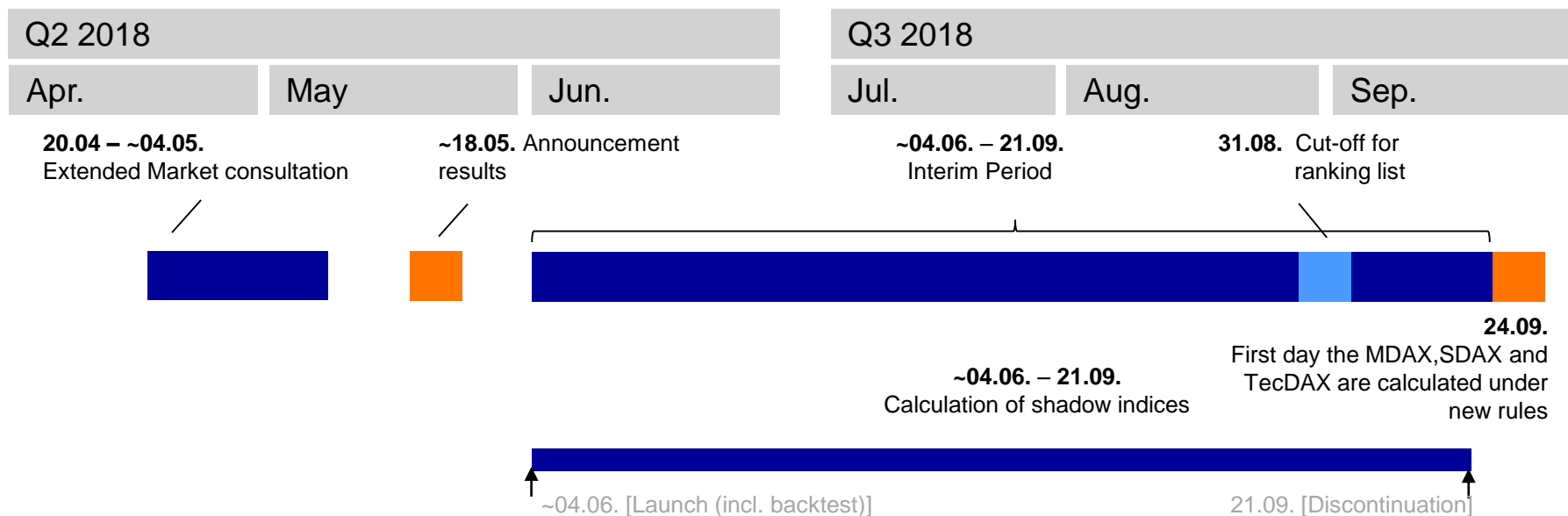➡ ▪ **No shadow indices would be calculated for derived indices**

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1) The placeholder [M] hereby refers to the number of additional places per index whereby the placeholder [N] refers to the number of companies per index in correspondence with the alternatives described above. E.g. MDAX 60 → M =10, N = 60.
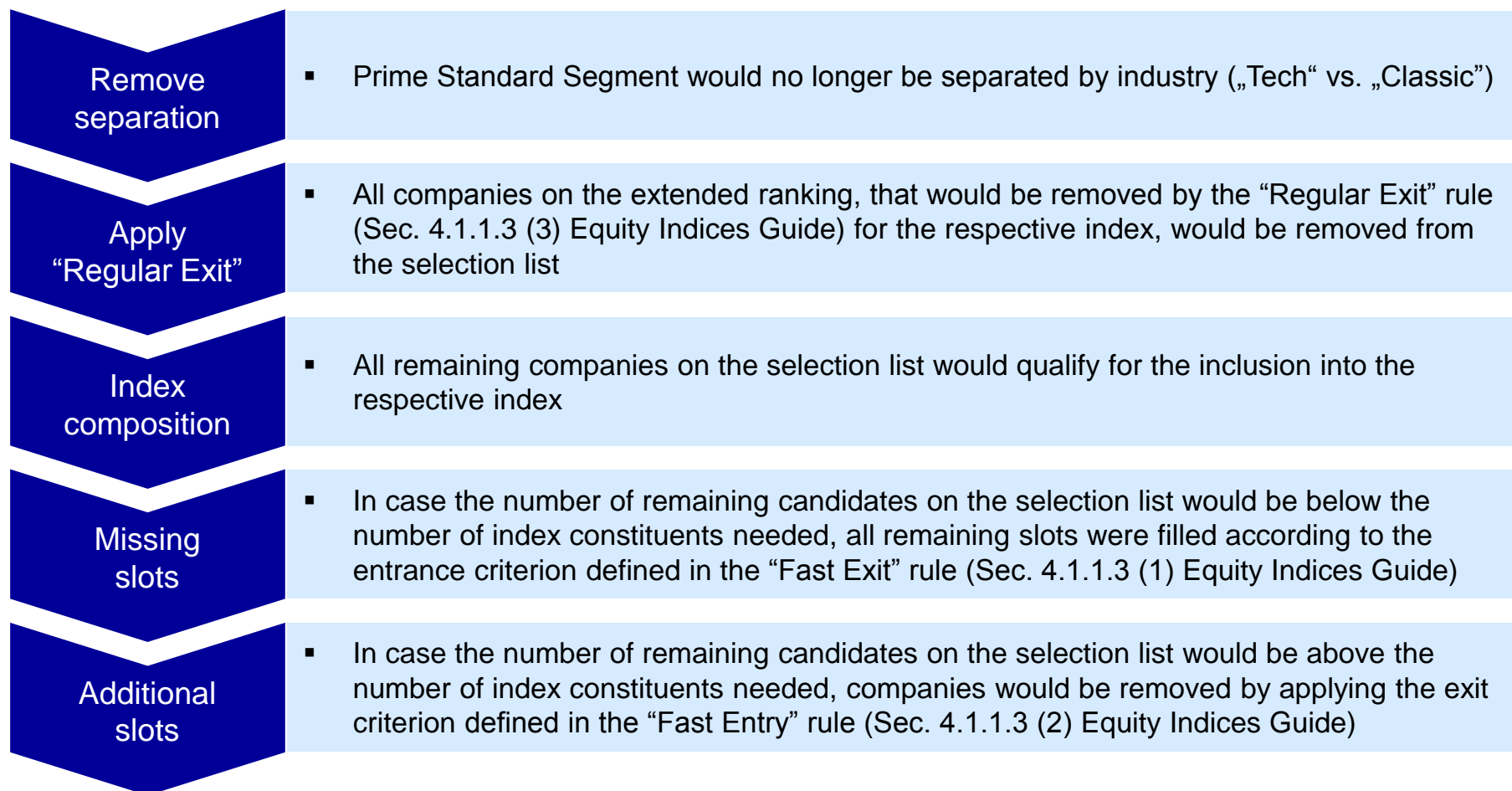
# 4.

## Potential transition period and procedure

# The following implementation schedule is considered

| Q2 2018 | | | Q3 2018 | | |
|---|---|---|---|---|---|
| Apr. | May | Jun. | Jul. | Aug. | Sep. |

**20.04 – ~04.05.**
Extended Market consultation

**~18.05.** Announcement results

**~04.06. – 21.09.**
Interim Period

**31.08.** Cut-off for ranking list

**24.09.**
First day the MDAX,SDAX and TecDAX are calculated under new rules

**~04.06. – 21.09.**
Calculation of shadow indices

~04.06. [Launch (incl. backtest)]          21.09. [Discontinuation]

➔
- Shadow indices represent the MDAX, SDAX and TecDAX under the new rules framework
- Weighting files, ranking lists and historical index values would be provided via MD&S interactive and on dax-indices.com
- **Important:** the composition of the "shadow indices" at their launch date (Jun. 4., 2018) would be the result of a backtest. Due to a consistent application of "buffer rules" throughout time, the composition of these indices would most likely deviate from the hypothetical composition, that would be in place if the transition from old to new rules would take place at that specific point in time (following the rules as stated on slide 13). Consequently, the hypothetical composition of the "shadow indices" on the date after their termination (Sept. 24., 2018) may deviate from the effective composition of the actual indices after the considered transition to the new methodology.
- → **For the avoidance of doubt, the respective index that would be launched as of Sept., 24 2018 may in its composition deviate from the respective shadow index which were calculated beforehand.**
- → **The shadow indices would only be calculated and published for informational purposes and would under no event be designed to serve as an underlying for financial instruments.**

# Transition: After merging „Tech" and „Classic", the initial index composition would be determined strictly rules-based[1]

| | |
|---|---|
| **Remove separation** | ▪ Prime Standard Segment would no longer be separated by industry („Tech" vs. „Classic") |
| **Apply "Regular Exit"** | ▪ All companies on the extended ranking, that would be removed by the "Regular Exit" rule (Sec. 4.1.1.3 (3) Equity Indices Guide) for the respective index, would be removed from the selection list |
| **Index composition** | ▪ All remaining companies on the selection list would qualify for the inclusion into the respective index |
| **Missing slots** | ▪ In case the number of remaining candidates on the selection list would be below the number of index constituents needed, all remaining slots were filled according to the entrance criterion defined in the "Fast Exit" rule (Sec. 4.1.1.3 (1) Equity Indices Guide) |
| **Additional slots** | ▪ In case the number of remaining candidates on the selection list would be above the number of index constituents needed, companies would be removed by applying the exit criterion defined in the "Fast Entry" rule (Sec. 4.1.1.3 (2) Equity Indices Guide) |

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1) Under the application of the considered rule framework stated on page 7.

# 5.

## Evaluation

# Scenario analysis:
# Impact of considered rule change on risk and return of MDAX[1]

## Historical Performance (TR)[1][2]



Legend: MDAX[1], MDAX 60, MDAX 70
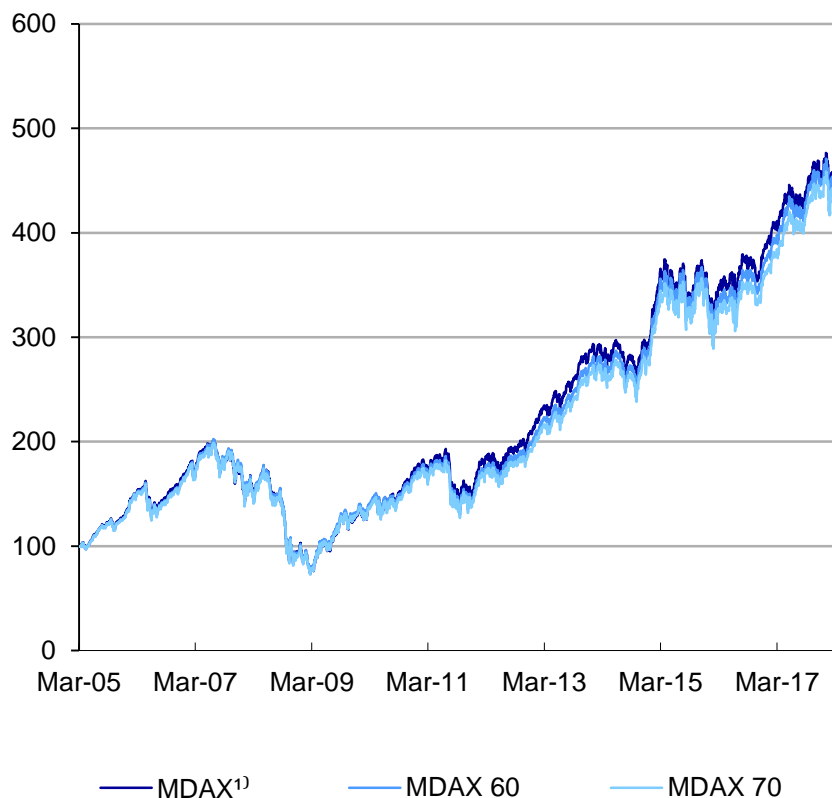
## Risk and Return Figures[1][2]

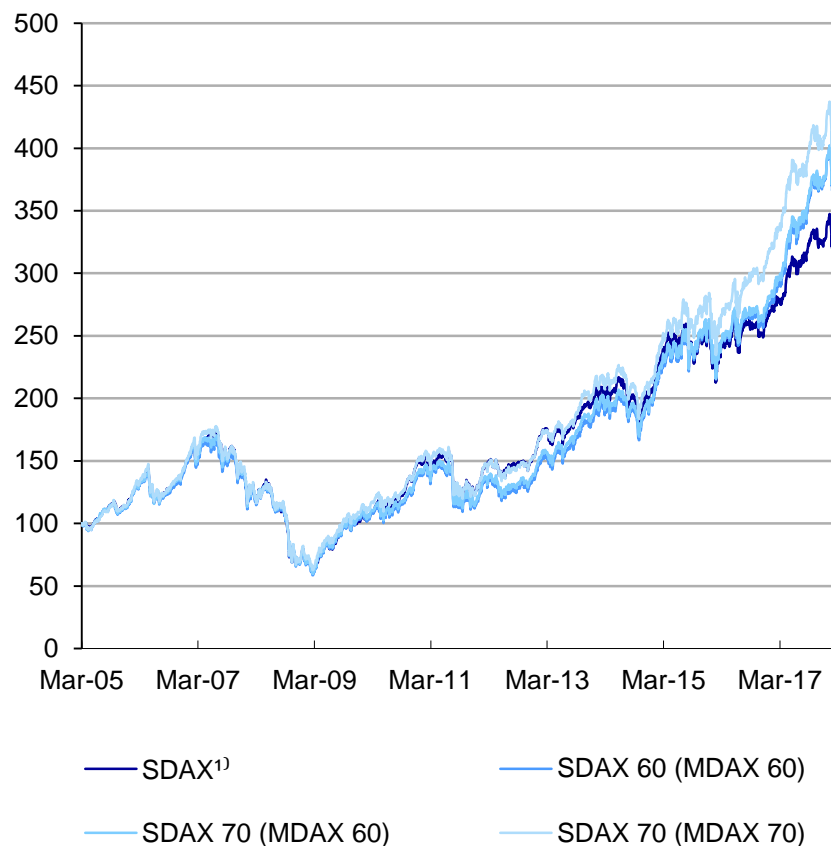| Key figures[3] | MDAX 50[1] | MDAX 60 | MDAX 70 |
|---|---|---|---|
| Perf (1Y) | 12.90% | 16.24% | 17.66% |
| Perf (3Y) | 9.68% | 10.45% | 10.83% |
| Perf (5Y) | 14.98% | 15.97% | 16.12% |
| Overall | 12.73% | 12.65% | 12.44% |
| Vola (1Y) | 11.89% | 12.10% | 12.06% |
| Vola (3Y) | 17.08% | 17.33% | 17.28% |
| Vola (5Y) | 15.77% | 15.97% | 15.98% |
| Vola (10Y) | 23.15% | 23.00% | 22.87% |
| Div.Yield | 2.43% | 2.28% | 2.28% |
| Correl | - | 0.9937 | 0.9935 |

1) As the rules underlying the MDAX have changed over time, the MDAX (50) has been recalculated based on the current rule set in order to show the difference arising from the considered rule change.
2) Risk and return and dividend figures are annualized and based on EUR total return. Time period: Mar. 2005 – Feb. 2018
3) As of: 28.02.2018

# Scenario analysis SDAX: Impact of considered rule change on risk and return of SDAX[1]

## Historical Performance (TR)[1][2]



Legend:
- SDAX[1]
- SDAX 60 (MDAX 60)
- SDAX 70 (MDAX 60)
- SDAX 70 (MDAX 70)

## Risk and Return Figures[1][2]

| Key figures[3] | SDAX 50[1] | SDAX 60 (MDAX 60) | SDAX 70 (MDAX 60) | SDAX 70 (MDAX 70) |
|---|---|---|---|---|
| Perf (1Y) | 20.96% | 35.78% | 32.92% | 26.20% |
| Perf (3Y) | 13.13% | 20.93% | 20.12% | 20.13% |
| Perf (5Y) | 14.30% | 21.05% | 20.33% | 19.80% |
| Overall | 10.01% | 11.32% | 11.30% | 11.94% |
| Vola (1Y) | 11.23% | 12.23% | 11.99% | 12.19% |
| Vola (3Y) | 15.56% | 16.46% | 16.27% | 15.91% |
| Vola (5Y) | 14.52% | 15.65% | 15.49% | 14.91% |
| Vola (10Y) | 17.90% | 19.58% | 19.23% | 18.31% |
| Div.Yield | 2.38% | 2.13% | 2.14% | 2.10% |
| Correl | - | 0.9655 | 0.9683 | 0.9655 |

1) As the rules underlying the SDAX have changed over time, the SDAX (50) has been recalculated based on the current rule set in order to show the difference arising from the considered rule change.
2) Risk and return and dividend figures are annualized and based on EUR total return. Time period: Mar. 2005 – Feb. 2018.
3) As of: 28.02.2018.

# Sensitivity analysis:
# Impact of considered rule change on risk and return of TecDAX[1]

## Historical Performance (TR)[1)2)]



— TecDAX 30[1]
— TecDAX 30 (incl. DAX companies)
— TecDAX 40 (incl. DAX companies)

## Risk and Return Figures[1)2)]

| Key figures[3] | TecDAX 30[1] | TecDAX 30 (incl. DAX companies ) | TecDAX 40 (incl. DAX companies) |
|---|---|---|---|
| Perf (1Y) | 39.53% | 27.70% | 29.14% |
| Perf (3Y) | 18.92% | 16.99% | 17.76% |
| Perf (5Y) | 24.11% | 22.52% | 22.63% |
| Overall | 12.75% | 12.35% | 12.38% |
| Vola (1Y) | 15.09% | 14.43% | 14.58% |
| Vola (3Y) | 19.53% | 19.27% | 19.23% |
| Vola (5Y) | 18.40% | 18.05% | 17.96% |
| Vola (10Y) | 23.97% | 23.67% | 23.13% |
| Div.Yield | 1.70% | 2.04% | 2.02% |
| Correl | - | 0.9758 | 0.9737 |

1) As the rules underlying the TecDAX have changed over time, the TecDAX (30) has been recalculated based on the current rule set in order to show the difference arising from the considered rule change.
2) Risk and return and dividend figures are annualized and based on EUR total return. Time period: Mar. 2005 – Feb. 2018.
3) As of: 28.02.2018.

# 6.

## Index statistics

# FF-MC and liquidity characteristics as well as turnover analysis of selected index scenarios (MDAX/SDAX)

## FF-MC, 12m ADTV (in mn EUR), XLM 25k and one-way turnover

| | 30 – 50 - 50 | | | 30 – 60 - 60 | | | 30 – 60 - 70 | | | 30 – 70 - 70 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **MDAX 50** | | | **MDAX 60** | | | **MDAX 60** | | | **MDAX 70** | | |
| | FF-MC | 12m ADTV | XLM 25k | FF-MC | 12m ADTV | XLM 25k | FF-MC | 12m ADTV | XLM 25k | FF-MC | 12m ADTV | XLM 25k |
| Min | 1,323 | 4.28 | 5.96 | 1,293 | 4.71 | 5.96 | 1,293 | 4.71 | 5.96 | 950 | 3.76 | 5.96 |
| Avg (L5)[1] | 1,456 | 4.68 | 21.40 | 1,483 | 5.06 | 23.02 | 1,483 | 5.06 | 23.02 | 1,218 | 4.25 | 25.55 |
| Max | 53,368 | 49.98 | 25.02 | 53,368 | 49.98 | 25.02 | 53,368 | 49.98 | 25.02 | 53,368 | 49.98 | 31.38 |
| Average | 4,558 | 14.18 | 13.53 | 4,579 | 15.33 | 13.59 | 4,579 | 15.33 | 13.59 | 4,137 | 14.13 | 14.72 |
| Median | 2,513 | 13.26 | 13.29 | 2,899 | 13.74 | 13.08 | 2,899 | 13.74 | 13.08 | 2,467 | 12.75 | 14.04 |
| | **SDAX 50** | | | **SDAX 60** | | | **SDAX 70** | | | **SDAX 70** | | |
| | FF-MC | 12m ADTV | XLM 25k | FF-MC | 12m ADTV | XLM 25k | FF-MC | 12m ADTV | XLM 25k | FF-MC | 12m ADTV | XLM 25k |
| Min | 231 | 0.75 | 15.36 | 333 | 1.11 | 17.13 | 231 | 0.05 | 17.13 | 222 | 0.05 | 21.76 |
| Avg (L5)[1] | 334 | 0.89 | 71.34 | 398 | 1.19 | 74.08 | 285 | 0.80 | 105.89 | 234 | 0.61 | 133.44 |
| Max | 4,246 | 20.64 | 82.46 | 2,201 | 20.64 | 82.46 | 2,201 | 20.64 | 225.69 | 2,201 | 20.64 | 225.69 |
| Average | 900 | 3.05 | 42.20 | 929 | 3.75 | 39.22 | 860 | 3.46 | 43.22 | 706 | 2.62 | 51.58 |
| Median | 656 | 2.30 | 41.84 | 767 | 2.91 | 36.42 | 735 | 2.85 | 39.79 | 600 | 2.05 | 45.04 |

| | MDAX 50 | MDAX 60 | MDAX 60 | MDAX 70 |
|---|---|---|---|---|
| Turnover[2] | NA | 26.57% | 26.57% | 29.09% |
| | SDAX 50 | SDAX 60 | SDAX 70 | SDAX 70 |
| Turnover[2] | NA | 46.75% | 46.98% | 34.56% |

1) Average over five companies with the lowest freefloat market capitalization, lowest 12m ADTV and lowest XLMs, respectively.
2) One-way turnover at time of potential switch to new methodology in Sept. 2018.The calculation is based on simulated compositions and prices from 28.02.2018.

# Market coverage – DAX/MDAX/SDAX

## Market Coverage[1]



Chart legend: ■ MDAX ■ SDAX ■ Rest

| Category (x-axis) | Rest | SDAX | MDAX | DAX |
|---|---|---|---|---|
| 50 / 50 | 6.09% | 3.42% | 17.30% | DAX |
| 60 / 60 | 1.72% | 4.23% | 20.86% | DAX |
| 60 / 70 | 1.38% | 4.57% | 20.86% | DAX |
| 70 / 70 | 1.07% | 3.75% | 21.99% | DAX |

Right-side labels: SDAX, MDAX
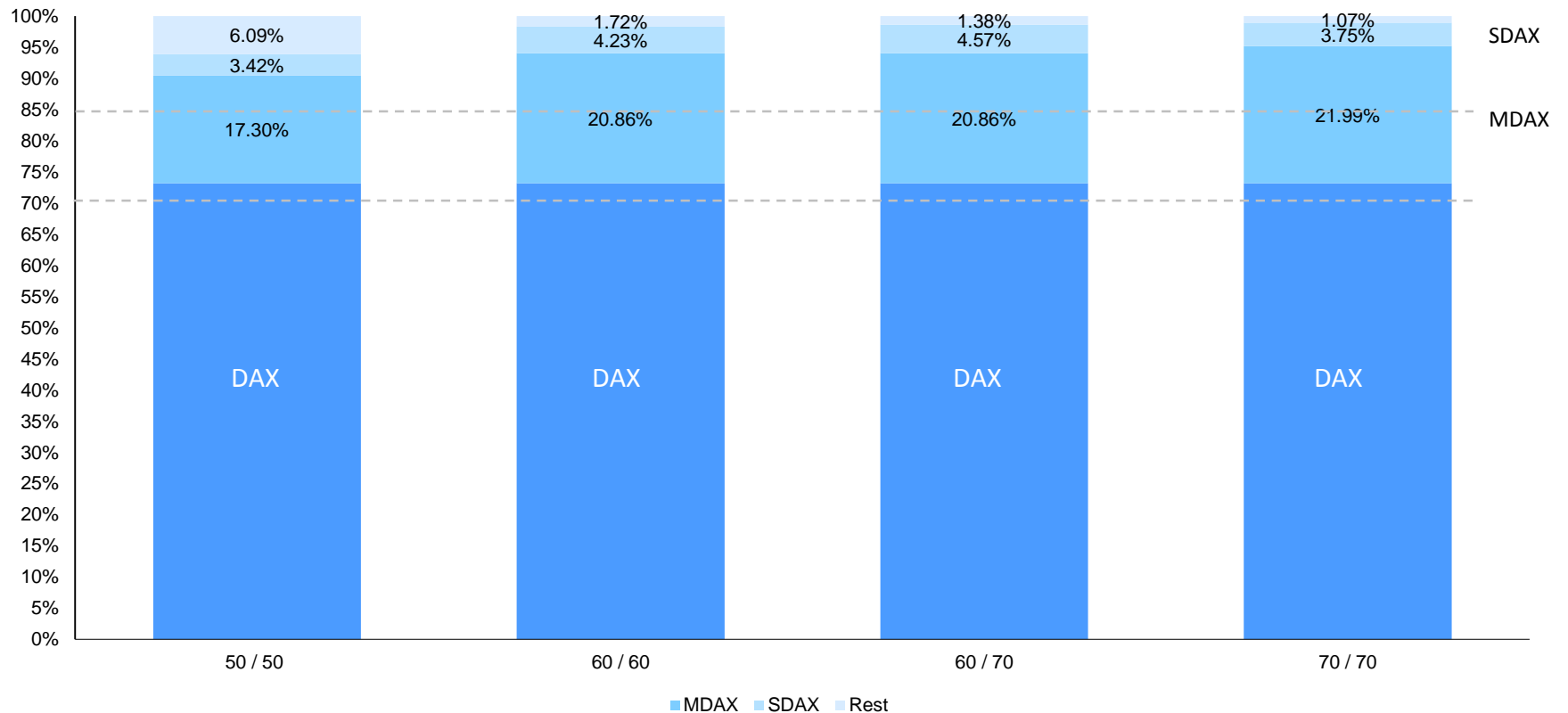
1) The basis for the calculation are all Prime Standard companies with assigned ranks on the ranking list for possible index membership. Cut-off date: 05.04.2018.

# FF-MC and liquidity characteristics as well as turnover analysis of selected index scenarios (TecDAX)

## FF-MC, 12m ADTV (in mn EUR), XLM 25k and one-way turnover

|  | 30 | | | 30 | | | 40 | | |

|  | TecDAX 30 | | | TecDAX 30 (incl. DAX) | | | TecDAX 40 (incl. DAX) | | |
|---|---|---|---|---|---|---|---|---|---|
|  | FF-MC | 12m ADTV | XLM 25k | FF-MC | 12m ADTV | XLM 25k | FF-MC | 12m ADTV | XLM 25k |
| Min | 311 | 1.68 | 8.14 | 333 | 1.68 | 2.38 | 181 | 0.59 | 2.38 |
| Avg (L5)[1] | 425 | 2.13 | 60.99 | 553 | 2.56 | 48.92 | 228 | 0.85 | 80.23 |
| Max | 10,804 | 44.85 | 73.00 | 88,307 | 208.74 | 71.38 | 88,307 | 208.74 | 95.01 |
| Average | 2,076 | 10.03 | 29.68 | 7,189 | 25.72 | 23.98 | 5,472 | 19.73 | 35.41 |
| Median | 1,511 | 5.07 | 23.91 | 1,812 | 9.30 | 23.11 | 1,354 | 4.21 | 27.16 |

|  | TecDAX 30 | TecDAX 30 (incl. DAX) | TecDAX 40 (incl. DAX) |
|---|---|---|---|
| Turnover[2] | NA | 30.00% | 34.68% |

1) Average over five companies with the lowest freefloat market capitalization, lowest 12m ADTV and lowest XLMs, respectively.
2) One-way turnover at time of potential switch to new methodology in Sept. 2018.The calculation is based on simulated compositions and prices from 28.02.2018.

# 7.

## Appendix

# Subsectors classified as "Tech" under Deutsche Börse sector classification[1]

| No. | Sector | Subsector |
|---|---|---|
| 1 | Industrial | Advanced Industrial Equipment |
| 2 | Industrial | Renewable Energies |
| 3 | Pharma & Healthcare | Biotechnology |
| 4 | Pharma & Healthcare | Medical Technology |
| 5 | Software | Internet |
| 6 | Software | IT-Services |
| 7 | Software | Software |
| 8 | Technology | Communications Technology |
| 9 | Technology | Electronic Components & Hardware |
| 10 | Technology | Semiconductors |
| 11 | Telecommunication | Fixed-Line Telecommunication |
| 12 | Telecommunication | Wireless Telecommunication |
| 13 | Telecommunication | Telecommunication Services |

1) For an overview of the full classification please consult the Equity Indices Guide available at www.dax-indices.com.

# Subsectors classified as "Classic" under Deutsche Börse sector classification[1]

| No. | Sector | Subsector | No. | Sector | Subsector |
|---|---|---|---|---|---|
| 1 | Automobile | Auto Parts & Equipment | 26 | Construction | Building Materials |
| 2 | Automobile | Automobile Manufacturers | 27 | Construction | Construction & Engineering |
| 3 | Consumer | Clothing & Footwear | 28 | Industrial | Containers & Packaging |
| 4 | Consumer | Consumer Electronics | 29 | Industrial | Heavy Machinery |
| 5 | Consumer | Home Construction & Furnishings | 30 | Industrial | Industrial Machinery |
| 6 | Consumer | Household Appliances & Housewares | 31 | Industrial | Industrial, Diversified |
| 7 | Consumer | Leisure | 32 | Industrial | Industrial Products & Services |
| 8 | Consumer | Personal Products | 33 | Transportation & Logistics | Airlines |
| 9 | Food & Beverages | Beverages | 34 | Transportation & Logistics | Logistics |
| 10 | Food & Beverages | Food | 35 | Transportation & Logistics | Transportation Services |
| 11 | Banks | Credit Banks | 36 | Media | Advertising |
| 12 | Banks | Mortgage Banks | 37 | Media | Broadcasting |
| 13 | Financial Services | Diversified Financial | 38 | Media | Movies & Entertainment |
| 14 | Financial Services | Private Equity & Venture Capital | 39 | Media | Publishing & Printing |
| 15 | Financial Services | Real Estate | 40 | Retail | Retail, Catalogue |
| 16 | Financial Services | Securities Brokers | 41 | Retail | Retail, Food & Drug |
| 17 | Insurance | Insurance | 42 | Retail | Retail, Internet |
| 18 | Insurance | Re-Insurance | 43 | Retail | Retail, Multiline |
| 19 | Basic Resources | Forest & Paper Products | 44 | Retail | Retail, Specialty |
| 20 | Basic Resources | Mining | 45 | Pharma & Healthcare | Pharmaceuticals |
| 21 | Basic Resources | Oil & Gas | 46 | Pharma & Healthcare | Health Care |
| 22 | Basic Resources | Steel & Other Metals | 47 | Utilities | Electricity |
| 23 | Chemicals | Chemicals, Commodity | 48 | Utilities | Water |
| 24 | Chemicals | Chemicals, Speciality | 49 | Utilities | Oil & Gas (Distribution) |
| 25 | Chemicals | Industrial Gases | 50 | Utilities | Multi-Utilities |

1) For an overview of the full classification please consult the Equity Indices Guide at www.dax-indices.com.

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