

September Implementation of DAX Reform 2021

Supporting Material

Frankfurt, July 19, 2021

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 - 3. Sector Allocation of DAX and MDAX



About the Analysis

- > The analysis is based on a <u>simulation</u> of the following rule changes that are going to be effective with the September Review:
 - > a) changes in Number of constituents for DAX and MDAX
 - > b) selection based on market capitalization (i.e. no turnover ranking applied any longer)
 - > c) introduction of a minimum liquidity threshold

<u>IMPORTANT NOTE</u>: The simulated compositions are based on the most recent ranking list with cut-off date May 31, 2021 that was published June 3, 2021. These <u>simulated compositions</u>, however, are not indicative of future compositions of the indices that will be effective in September and only aim to illustrate the application of the rules.



September 2021 — Illustration of new Selection Process: 1.) Minimum Liquidity as New Basic Criteria, 2.) Ranking and Selection Solely based on FF-Market Cap, 3.) Adjusted Number of Constituents DAX and MDAX

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New basic criteria (4.1.1.1*)

- > [...]
- > Minimum Liquidity on FWB®:
 - Initial eligibility: minimum trading volume over the last 12-months of 1 bn EUR at FSE or show a turnover rate of 20%
- > Continued eligibility: a minimum trading volume over the last 12-months of at least 0.8 bn EUR or show a turnover rate of 10%
- > Foreign companies must have:
 - > the legal headquarter in EU or EFTA country, or
 - > an operating headquarter in Germany

Ranking list (4.1.1.2*)

- All companies fulfilling the basic criteria are ranked on a monthly basis in a ranking list
 - For DAX Index only, companies must show positive EBITDA in 2 consecutive years to be eligible
- > Ranking occurs with respect to free-float market capitalization (number of shares x > free-float x 20-day VWAP¹))

Selection rules (4.1.1.3*)

- The four selection rules Fast Exit, Fast Entry, Regular Exit, Regular Entry are applied to the ranking list to determine the index composition
- Each of the four indices is reviewed on a quarterly basis according to Fast Exit and Fast Entry rules
- Additionally, the Regular Exit and Regular Entry rules apply to the indices semiannually
- > Selection rules are adapted, such that selection is based on free-float market cap only
- Thresholds given in the Selection rules are adapted to the new number of components in DAX and MDAX

...

- Weighting
- > Capping
 - ...

Eligibility for Ranking

Creation of Ranking List

Determination of Index Composition



^{*} Chapter numbers refer to the "Guide to the DAX Equity Indices", in its current version 11.2 https://www.dax-indices.com/document/Resources/Guides/Guide_to_the_DAX_Equity_Indices.pdf

^{1) 20-}days VWAP: volume weighted average price over 20 days

Transition Process for Change in Number of Constituents Based on Standard Selection Rules

> Before creating the new ranking list, the rules applicable in case of Shortfall and Surplus of constituents are artificially triggered by changing the target number of constituents to 40 for DAX and 50 for MDAX, so that, in a second step, the standard review rules are executed according to the new index sizes.

1. DAX 30 > DAX 40:

- Definition of new, predefined number of components in DAX: 40
- Determination of the actual number of companies in DAX (30) below target (40) → shortfall
- Application of the rule: Action in case of shortfall:
- Addition of 10 companies that are ranked better than 47 in free-float market capitalization based on Fast Exit rule. Fast Exit (60): A company is replaced if it ranks 60 or worse in terms of free-float market capitalization. The replacing company must be ranked 47th or better.

No. of components in DAX increased to 40

2. Standard Review DAX

- After resetting the DAX to its predefined number of companies, now 40. the review is carried out as usual
- DAX is reviewed based on Fast Exit, Fast Entry and then for Regular Exit and Regular Entry.

Review finalized for DAX

3. MDAX 60 > MDAX 50

- Definition of new, predefined number of companies in MDAX: 50
 Determination of the actual number of
- Determination of the actual number of companies in MDAX (60) above target (50) → surplus
- Application of rules: Action in case of surplus
- Deletion of 10 companies that are ranked worse than 97 in free-float market capitalization based on Fast Entry rule. Fast Entry (83): A company is included in the index if it ranks 83 or better in terms of free-float market capitalization. The company with the lowest free-float market capitalization ranked 97th or lower will be removed.

of the actual number of is carried out as usual

MDAX is reviewed based on Fast Exit, Fast Entry and then Regular Exit and Regular Entry.

4. Standard Review MDAX

After resetting the MDAX to its predefined

number of companies, now 50, the review

> SDAX is then reviewed.

No. of components in MDAX decreased to 50

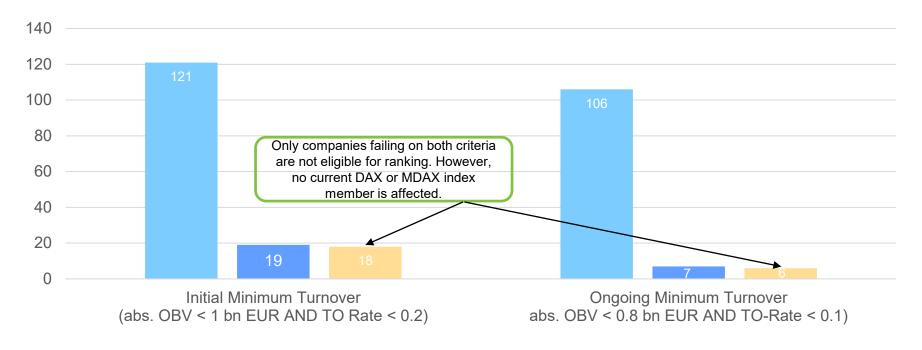
Review finalized for MDAX

^{*} Chapter numbers refer to the "Guide to the DAX Equity Indices,", in its current version 11.2 https://www.dax-indices.com/document/Resources/Guides/Guide to the DAX Equity Indices.pdf,



Number of Previously Ranked Companies not Fulfilling the New Minimum Liquidity Requirement

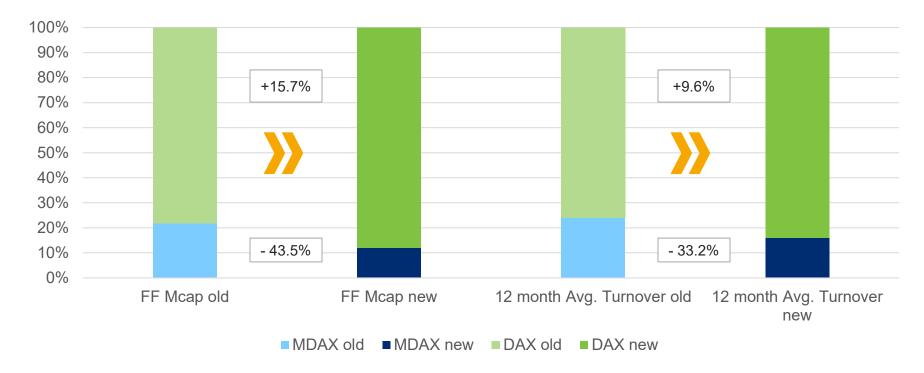
No current Index components affected: the best-ranked affected company has rank #123



■ Companies below abs. 12-month OBV only ■ Companies below Turnover Rate only ■ Companies below both



Impact of Changes in Number of Constituents on Index Market Capitalization¹⁾ and 12-month Average Turnover²⁾



Analysis based on Market Cap data as of May 31, 2021 and live Index compositions as of June 21, 2021 compared to data of SIMU Index compositions based on SIMU Ranking List as of May 31, 2021 Turnover data used are as of June 30, 2021

Please see https://www.dax-indices.com/document/Resources/Market Consultation/Client Information DAX Index ENG.pdf for more detail on companies moving from MDAX to DAX

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Scenario Analysis: Impact of Considered Rule Change on Free-float Market Cap per Index — Actual vs. Simulated Composition

Impact Analysis¹)		Free-float Market Capitalization in Index (in mn EUR) ²⁾						
		Min	Max	Sum	Median	Average		
DAX	Before	10,272	121,026	1,206,002	20,754	40,200		
	After	90,75	125,305	1,395,547	20,347	34,888		
MDAX	Before	1,389	33,490	336,100	4,919	5,601		
	After	1,735	8,864	190,018	3,120	3,800		
SDAX ³⁾	Before	372	2,659	69,603	661	994		
	After	376	1,838	66,854	823	955		
TecDAX ³⁾	Before	612	12,433	122,709	2,306	4,090		
	After	630	12,772	126,097	2,484	4,203		



¹⁾ Simulation of the September 2021 Review based on cut-off date May 31, 2021. Market Cap data as of June 21, 2021

²⁾ Market Cap Values are based on capped no. of shares. Capping can differ for the same security if total no. of components in Index changes

³⁾ Effect on compositions of SDAX and TecDAX are mainly based on revocation of selection by turnover rank.

Scenario Analysis: Impact of Considered Rule Change on Orderbook Volume per Index — Actual vs. Simulated Composition

Impact Analysis ¹⁾		Orderbook Volume (in mn EUR)					
		Min	Max	Sum	Median	Average	
DAX	Before	10,476	76,849	886,634	19,227	29,554	
	After	3,833	76,849	972,184	17,543	24,304	
MDAX	Before	1,344	13,854	279,521	4,285	4,658	
	After	631	12,111	186,820	3,161	3,736	
SDAX	Before	121	2,920	55,858	354	797	
	After	101	3,401	61,744	857	882	
TecDAX	Before	188	76,849	245,842	3,138	8,194	
	After	188	76,849	245,580	3,138	8,185	

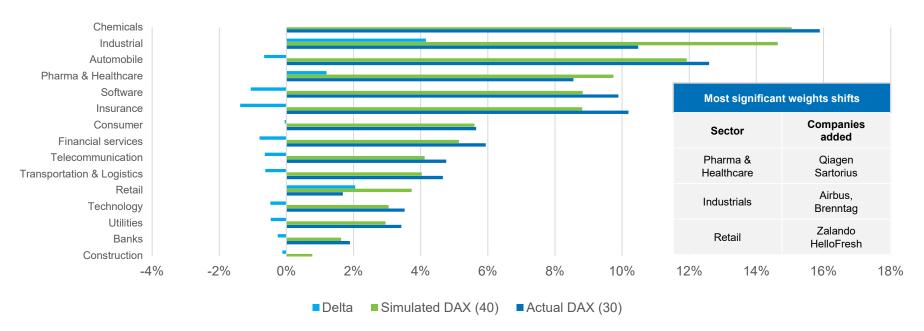


¹⁾ Simulation of September 2021 Review based on cut-off date May 31, 2021. Turnover data as of June 30, 2021.

Number of Constituents: Increase for DAX from 30 to 40 and Reduce for MDAX from 60 to 50

Impact on DAX

Changes in Sector Allocation: actual DAX (30) vs. simulated DAX (40)



¹⁾ Simulation of the September 2021 Review based on cut-off date May 31, 2021. Component weightings based on data as of June 21, 2021

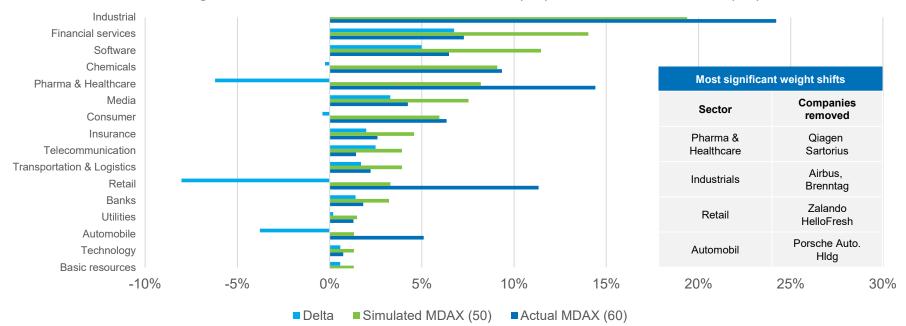


Market Cap Values are based on capped no. of shares

Number of Constituents: Increase for DAX from 30 to 40 and Reduce for MDAX from 60 to 50

Impact on MDAX

Changes in Sector Allocation: actual MDAX (60) vs. simulated MDAX (50)



¹⁾ Simulation of the September 2021 Review based on cut-off date May 31, 2021. Component weightings based on data as of June 21, 2021



Market Cap Values are based on capped no. of shares

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