



Index Research and Design | Equities

Rebalance is not control: Understanding exposure persistence in factor indices

July 2026

AUTHORS

Maylan Cheung

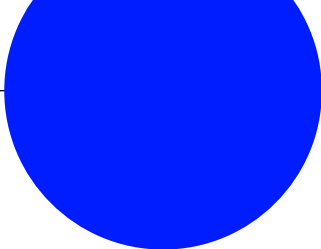
Manager Research, Equities and Multi Asset
Maylan.Cheung@lseg.com

Saul Austin

Senior Quant Analyst, Sustainable Investing
Saul.Austin@lseg.com

Ely Klepfish

Manager Research, Equities and Multi Asset
Ely.Klepfish@lseg.com



Contents

What causes some factor exposures to survive while others fade? 3

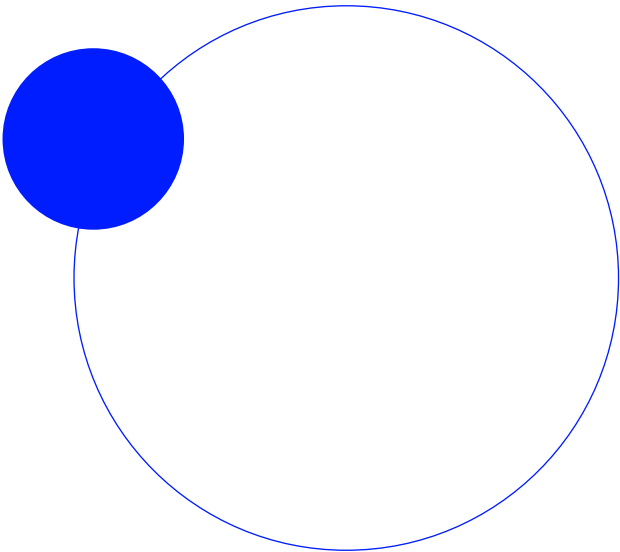
Not all factor exposures exhibit the same persistence 4

Is exposure decay driven by market drift or signal evolution? 6

Exposure persistence versus opportunity persistence 8

Implication for index design..... 9

Conclusion 9



What causes some factor exposures to survive while others fade?

Factor indices are designed to provide investors with tools to capture risk premia from exposure to specific characteristics such as Value, Momentum, Quality, Low Volatility, and Size. To achieve their intended purpose, the factor exposure must remain close to its target level over time. However, not all factors are equally stable.

Using FTSE Developed ex-US Target Exposure Pure Factor indices, we compared the persistence of factor exposures over time. Our research focused on Momentum and Low Volatility, two factors that represent fundamentally different persistence features.

When indices are rebalanced, intended exposures are satisfied (or as close to satisfied as is achievable), but there is no guarantee that the targeted factor exposure levels will remain stable until the next review. The key reason is that the factor characteristics of individual stocks can change significantly between rebalances.

Take Momentum as an example. Stocks that exhibit strong Momentum relative to the rest of the market when an index is rebalanced, can lose that characteristic rapidly, causing index exposure to weaken between reviews. By contrast, Low Volatility stocks tend to retain their defining characteristics for longer periods, allowing exposure to remain relatively stable.

Indices that measure factors with rapidly changing signals may require more frequent rebalancing to maintain their intended characteristics, while factors with more persistent signals may achieve similar exposure outcomes with less frequent review.

Exposure is measured at rebalance, but the universe characteristics can change between rebalances

Factor indices are typically evaluated based on the exposures they achieve at rebalancing. For investors, however, exposure between reviews is just as important as exposure at the review date itself.

This raises a simple but important question:

How much of the targeted factor exposure survives until the next review?

The answer matters because realised exposure, not exposure measured at rebalance, determines how faithfully an index represents the intended factor.

Using FTSE Developed ex-US Target Exposure Pure Factor indices, we examined how factor exposures evolved between reviews and why some factors exhibit far greater persistence than others.

Pure Factor indices provide investors with tools to isolate factor risk premia relative to a passive benchmark and to manage exposure to specific risk factors. These indices are constructed by tilting benchmark constituent weights toward a target factor while maintaining benchmark exposure to other recognised factors.

At rebalance, the index weights are solved to achieve the desired exposure. Thereafter, index exposure evolves through three mechanisms:

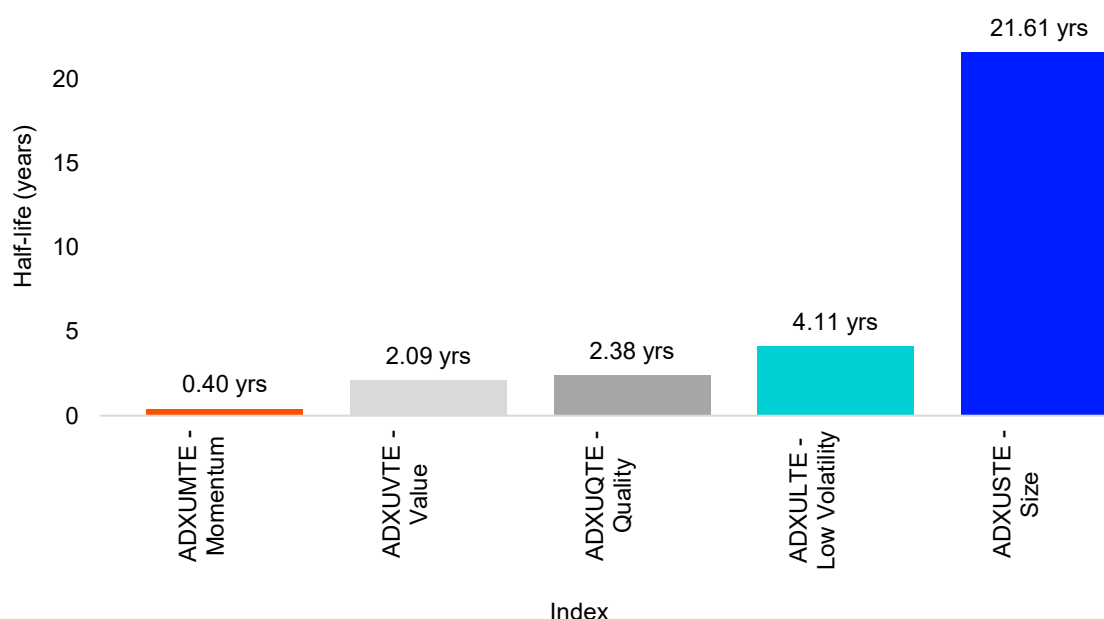
1. **Market drift** - constituent weights change as market values fluctuate.
2. **Signal evolution** - factor exposures (scores) of individual securities change between reviews.
3. **Review resets** - exposures are refreshed at periodic index reviews.

Note that even if portfolio weights remain unchanged, factor exposure can change materially if the characteristics that define the factor evolve. In what follows we show that barring extreme and rare market events, our analysis suggests that, outside of exceptional market stress, signal evolution is the dominant contributor to exposure decay, with market drift playing a secondary role.

Not all factor exposures exhibit the same persistence

To illustrate the framework, we examined two factors that represent distinct persistence regimes as shown in Chart 1:

Chart 1: Comparison of decay rate of index targeted exposure, half-life time of fitted exponential decay



Source: FTSE Russell, data as of March 2026.

- Momentum - low exposure persistence.
- Low Volatility - high exposure persistence.

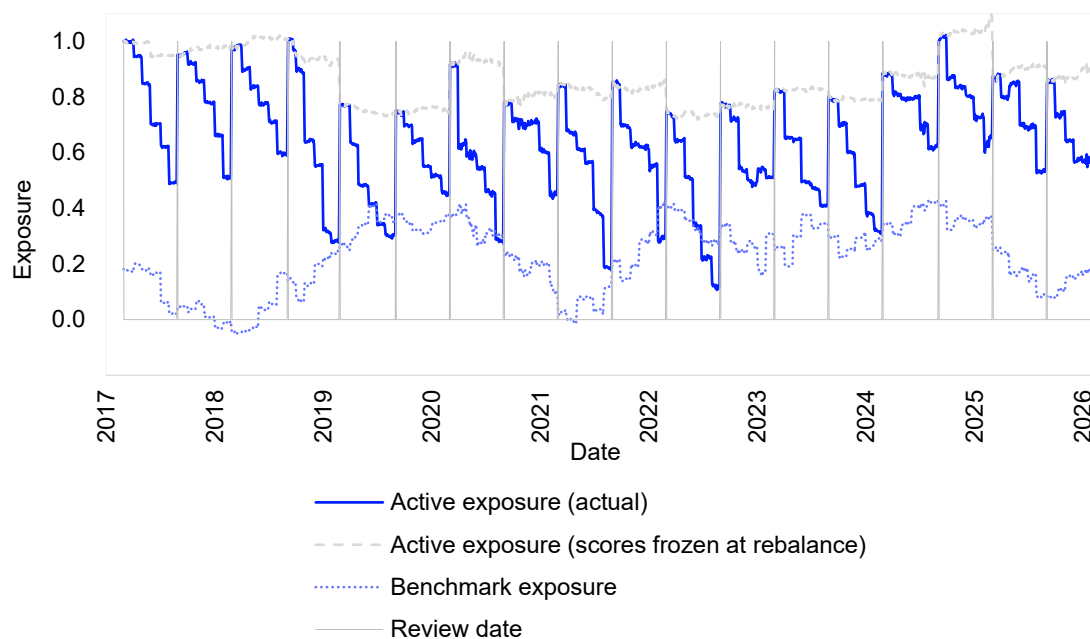
We focused on factors with broadly comparable persistence profiles. Size was excluded because its exposure half-life exceeds forty typical semi-annual review periods, making it an outlier relative to the other factors considered.

To assess the differences between factors we selected Pure Factor indices from the suite of current [FTSE Global Factor Index Series](#):

- [FTSE Developed ex US Pure Momentum Target Exposure Factor Index](#)
- [FTSE Developed ex US Pure Low Volatility Target Exposure Factor Index](#)

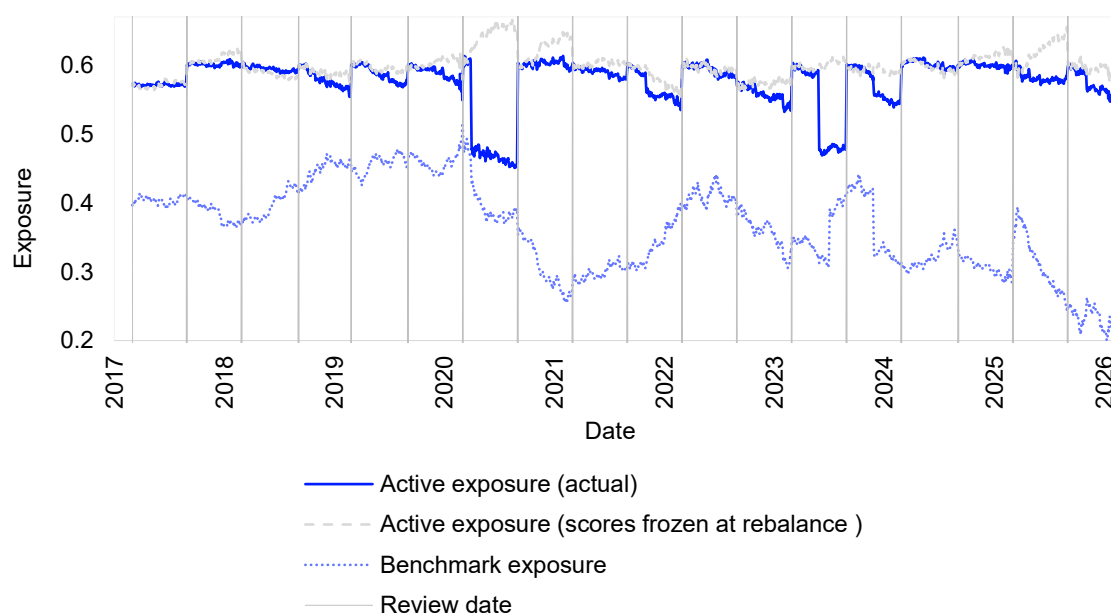
Charts 2 and 3 show the evolution of realised exposure for FTSE Developed ex-US Pure Momentum (ADXUMTE) and Pure Low Volatility Target Exposure indices (ADXULTE).

Chart 2: Momentum Pure Factor, FTSE Developed ex-US universe - targeted exposure 1 (units of market cap weighted standard deviation)



Source: FTSE Russell, data as of March 2026.

Chart 3: Low Volatility Pure Factor, FTSE Developed ex-US universe - targeted exposure 0.6 (units of market cap weighted standard deviation)

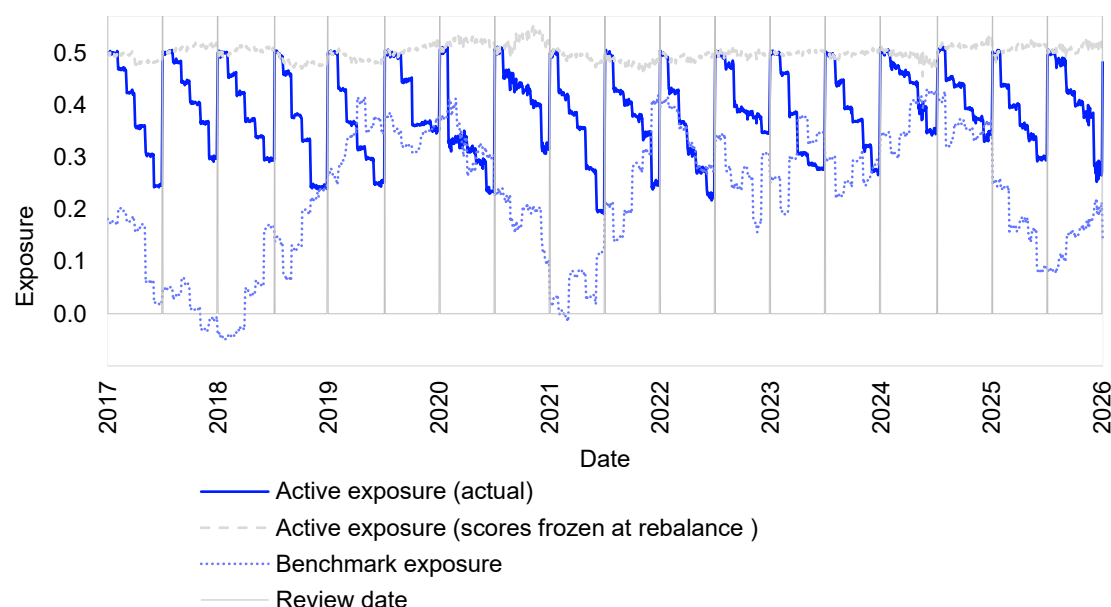


Source: FTSE Russell, data as of March 2026.

Momentum exposure declined steadily between reviews and required substantial resets at rebalance. By contrast, Low Volatility exposure remained relatively stable, exhibiting only modest deterioration over time.

Moreover, the decline in Momentum exposure was remarkably persistent. The exposure was typically highest immediately after a rebalance and decayed gradually until the next review. Reducing the target exposure from 1.0 to 0.5 standard deviations changed the level of exposure but did not materially alter the pattern of decay - see Chart 4.

Chart 4: Momentum Pure Factor, FTSE Developed ex-US universe - targeted exposure 0.5 (units of market cap weighted standard deviation)



Source: FTSE Russell, data as of March 2026.

Is exposure decay driven by market drift or signal evolution?

To separate the impact of the market drift and changing security scores we compared actual index exposures against ones calculated using security scores frozen at rebalance.

The results indicated that market drift alone did not explain the observed exposure decay. Instead, monthly changes in constituent factor signals appeared to be the dominant driver of the deterioration observed in Momentum exposure and therefore was responsible for the overall difference between the behaviour of Momentum and Low Volatility.

We therefore turned to the persistence of the underlying signals themselves.

At each review date, we identified the benchmark weighted top quintile of stocks ranked by the target factor. Because the Target Exposure methodology allocates large active weights to the highest scoring stocks, changes in this top quintile segment have the greatest influence on overall index exposure. We then examined how those stocks evolved by the subsequent review.

The average Momentum score within the top quintile fell from 1.56 immediately after the rebalance to 0.74 by the next review. In contrast, Low Volatility scores remained virtually unchanged, declining from 1.38 to 1.35.

Stocks that initially defined the Momentum opportunity set lost more than half their score strength before the next review. Importantly, this occurred even though most of the original stocks remained in the universe. We concluded that exposure loss was therefore driven by changing factor characteristics rather than constituent turnover.

The Low Volatility factor behaved differently. The defining characteristics of low volatility stocks remained largely intact over time, which allowed the index to maintain its intended exposure with far less deterioration.

Changes in factor characteristics over time explained the markedly different exposure decay rates observed in the two indices:

Exposure persistence follows signal persistence

Next we examined how closely the stocks that defined the top quintile at the index rebalance continued to resemble the original opportunity set as their scores were updated each month, see Table 1.

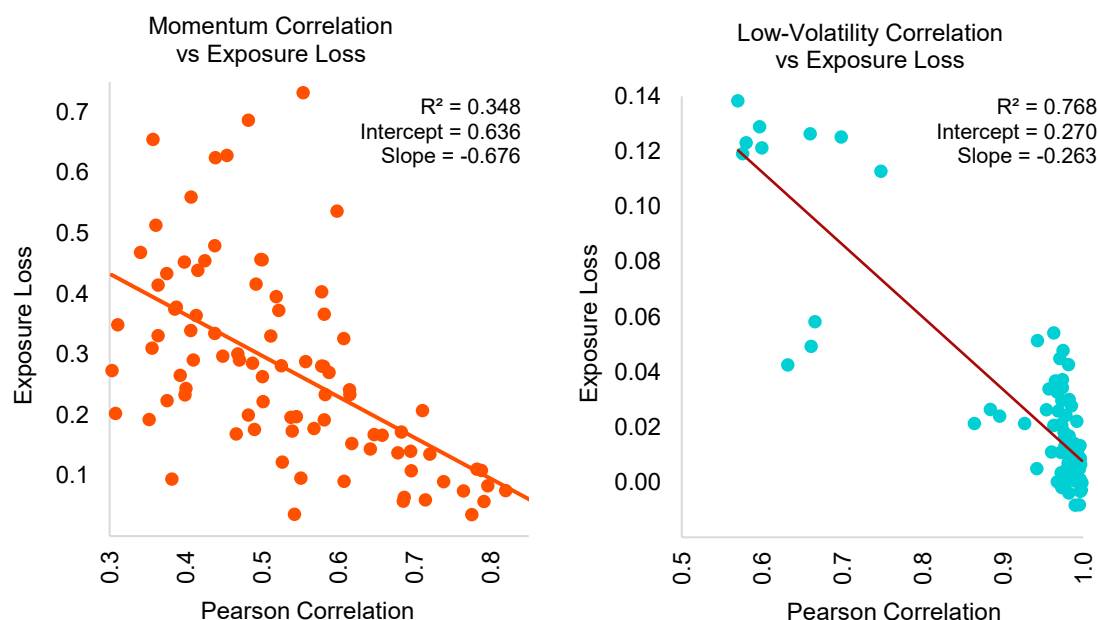
For Momentum, the correlation between the rebalanced opportunity set and the current signal declined steadily throughout the review cycle. This indicated that the stocks carrying the largest weights became progressively less representative of the factor they were originally selected to capture. For Low Volatility the decline was insignificant.

Table 1: Correlation between top quintile of scores at rebalance and at each of five successive months prior to next rebalance.

Momentum						Low Volatility					
Rebalance date	1m	2m	3m	4m	5m	Rebalance date	1m	2m	3m	4m	5m
Mar-17	0.79	0.62	0.45	0.39	0.36	Mar-17	1.00	0.99	0.99	0.98	0.97
Sep-17	0.77	0.55	0.47	0.47	0.42	Sep-17	1.00	0.99	0.99	0.98	0.98
Mar-18	0.80	0.64	0.54	0.50	0.39	Mar-18	1.00	0.99	0.98	0.98	0.97
Sep-18	0.79	0.58	0.50	0.48	0.55	Sep-18	1.00	0.99	0.99	0.98	0.97
Mar-19	0.68	0.56	0.41	0.37	0.34	Mar-19	1.00	0.99	0.98	0.98	0.97
Sep-19	0.71	0.53	0.31	0.40	0.41	Sep-19	0.99	0.99	0.98	0.96	0.95
Mar-20	0.47	0.51	0.52	0.50	0.45	Mar-20	0.75	0.70	0.66	0.60	0.57
Sep-20	0.86	0.74	0.69	0.54	0.44	Sep-20	0.99	0.99	0.98	0.97	0.94
Mar-21	0.66	0.61	0.49	0.40	0.36	Mar-21	0.99	0.99	0.98	0.98	0.97
Sep-21	0.69	0.50	0.37	0.36	0.41	Sep-21	0.99	0.98	0.98	0.97	0.96
Mar-22	0.78	0.61	0.58	0.60	0.44	Mar-22	0.99	0.99	0.98	0.97	0.96
Sep-22	0.68	0.58	0.59	0.40	0.39	Sep-22	1.00	0.99	0.98	0.97	0.97
Mar-23	0.68	0.49	0.36	0.31	0.36	Mar-23	1.00	0.99	0.60	0.58	0.58
Sep-23	0.70	0.48	0.61	0.49	0.44	Sep-23	1.00	0.98	0.63	0.66	0.67
Mar-24	0.82	0.61	0.38	0.35	0.30	Mar-24	1.00	0.99	0.98	0.98	0.97
Sep-24	0.72	0.65	0.58	0.58	0.52	Sep-24	1.00	0.99	0.99	0.99	0.98
Mar-25	0.76	0.54	0.57	0.54	0.41	Mar-25	0.98	0.93	0.90	0.88	0.86
Sep-25	0.86	0.71	0.58	0.52	0.42	Sep-25	1.00	0.97	0.97	0.96	0.94

Source: FTSE Russell, data as of March 2026.

Chart 5: Scatter plot of correlation between top quintile of scores at rebalance and at each of five successive months versus loss of index exposure



Source: FTSE Russell, data as of March 2026.

Chart 5 shows the relationship between the correlations presented in Table 1 and the loss of targeted exposure. The Momentum plot shows linear dependence derived from evenly spread points. Contrary to that, the Low Volatility plot consists of a cluster of correlations close to 1 and several distinct points of smaller correlations yielding, on average, a larger loss of exposure. The strong negative relationship for Momentum indicates that as the current signal diverges from the rebalanced signal, the index became progressively less aligned with the original opportunity set, resulting in a systematic loss of exposure.

Exposure persistence versus opportunity persistence

A declining index exposure does not necessarily imply that the factor opportunity itself has disappeared. To separate these effects, we compared index exposure with benchmark exposure.

Benchmark exposure represents the factor opportunity set available in the market. Index exposure represents how effectively the portfolio remains aligned with that opportunity set. This distinction helps separate the persistence of the market opportunity from the persistence of the index's representation of that opportunity.

For Momentum, the benchmark opportunity set remained available throughout the sample period. The challenge was not the disappearance of Momentum opportunities, it was the loss of alignment of factor scores with those opportunities after the rebalance.

The intuitive explanation is as follows - at the index rebalance the high score stocks are allocated large weights. At the monthly update of the scores, those weights were no longer associated with the high scores. As the scores increasingly deviated from the rebalance configuration, their alignment with the weights decreased further, resulting in continuous decay of index exposure.

For Low Volatility, the opportunity set evolved much more slowly, making alignment easier to maintain between reviews.

This distinction is important because it changes how we think about reviews.

Reviews do not simply restore exposure after drift has occurred.

They refresh exposure to an evolving opportunity set.

Implication for index design

Our findings suggest that the frequency of review should not be treated as a mere operational decision.

Factors whose defining characteristics evolve rapidly may require more frequent refreshes if maintaining exposure to them is the objective. Monotonic decay of the targeted exposures and its alignment with the decay of score correlation relative to the latest rebalance suggest that the annual turnover may be unaffected by increased frequency of the rebalance.

Factors with highly persistent signals can tolerate longer review intervals while maintaining similar levels of exposure.

The relevant design question is therefore not:

How often should an index be rebalanced?

but rather:

How quickly does the underlying signal evolve?

The answer determines how quickly exposure decays and how frequently it must be refreshed.

Conclusion

Exposure decay is often described as a consequence of changing constituent weights.

Our analysis points to a more fundamental explanation.

The persistence of factor exposure depends critically on the persistence of the underlying signal.

Momentum and Low Volatility provide two contrasting examples of the phenomenon. One signal evolves rapidly and requires frequent refreshing of the index weights. The other remains largely intact between reviews.

More broadly, factor indices should not be evaluated solely by the exposures they target at rebalance. They should also be evaluated by how long those exposures survive.

Rebalance creates exposure. Signal persistence determines whether that exposure survives.

ABOUT FTSE RUSSELL

FTSE Russell, LSEG's global index leader, provides innovative benchmarking, analytics and data solutions for investors worldwide. FTSE Russell calculates thousands of indexes that measure and benchmark markets and asset classes in more than 70 countries, covering 98% of the investable market globally.

FTSE Russell index expertise and products are used extensively by institutional and retail investors globally. Approximately \$20 trillion is benchmarked to FTSE Russell indexes. Leading asset owners, asset managers, ETF providers and investment banks choose FTSE Russell indexes to benchmark their investment performance and create ETFs, structured products and index-based derivatives.

A core set of universal principles guides FTSE Russell index design and management: a transparent rules-based methodology is informed by independent committees of leading market participants. FTSE Russell is focused on applying the highest industry standards in index design and governance and embraces the IOSCO Principles. FTSE Russell is also focused on index innovation and customer partnerships as it seeks to enhance the breadth, depth and reach of its offering.

CONTACT US

To receive our research and insights email and Market Maps reports, directly to your inbox, subscribe [here](#).

To learn more, visit lseg.com/ftse-russell; email info@ftserussell.com; or call your regional Client Service team office:

EMEA +44 (0) 20 7866 1810

Japan: +81 3 6441 1430

North America +1 800 721 2225

Asia Pacific ex Japan: +852 2164 3333

Disclaimer

© 2026 London Stock Exchange Group plc and its applicable group undertakings ("LSEG"). LSEG includes (1) FTSE International Limited ("FTSE"), (2) Frank Russell Company ("Russell"), (3) FTSE Global Debt Capital Markets Inc. "FTSE Canada", (4) FTSE Fixed Income LLC ("FTSE FI"), (5) FTSE (Beijing) Consulting Limited ("WOFE"), FTSE EU SAS ("FTSE EU"). All rights reserved.

FTSE Russell® is a trading name of FTSE, Russell, FTSE Canada, FTSE FI, WOFE, FTSE EU and other LSEG entities providing LSEG Benchmark and Index services. "FTSE®", "Russell®", "FTSE Russell®", "FTSE4Good®", "ICB®", "Refinitiv", "WMR™" "FR™" and all other trademarks and service marks used herein (whether registered or unregistered) are trademarks and/or service marks owned or licensed by the applicable member of LSEG or their respective licensors.

FTSE International Limited is authorised as a Benchmark Administrator and regulated in the United Kingdom (UK) by the Financial Conduct Authority ("FCA") according to the UK Benchmark Regulation, FCA Reference Number 796803. FTSE EU SAS is authorised as Benchmark Administrator and regulated in the European Union (EU) by the Autorité des Marchés Financiers ("AMF") according to the EU Benchmark Regulation.

All information is provided for information purposes only. All information and data contained in this publication is obtained by LSEG, from sources believed by it to be accurate and reliable. Because of the possibility of human and mechanical inaccuracy as well as other factors, however, such information and data is provided "as is" without warranty of any kind. No member of LSEG nor their respective directors, officers, employees, partners or licensors make any claim, prediction, warranty or representation whatsoever, expressly or impliedly, either as to the accuracy, timeliness, completeness, merchantability of any information or LSEG Products, or of results to be obtained from the use of LSEG products, including but not limited to indices, rates, data and analytics, or the fitness or suitability of the LSEG products for any particular purpose to which they might be put. The user of the information assumes the entire risk of any use it may make or permit to be made of the information.

No responsibility or liability can be accepted by any member of LSEG nor their respective directors, officers, employees, partners or licensors for (a) any loss or damage in whole or in part caused by, resulting from, or relating to any inaccuracy (negligent or otherwise) or other circumstance involved in procuring, collecting, compiling, interpreting, analysing, editing, transcribing, transmitting, communicating or delivering any such information or data or from use of this document or links to this document or (b) any direct, indirect, special, consequential or incidental damages whatsoever, even if any member of LSEG is advised in advance of the possibility of such damages, resulting from the use of, or inability to use, such information.

No member of LSEG nor their respective directors, officers, employees, partners or licensors provide investment advice and nothing in this document should be taken as constituting financial or investment advice. No member of LSEG nor their respective directors, officers, employees, partners or licensors make any representation regarding the advisability of investing in any asset or whether such investment creates any legal or compliance risks for the investor. A decision to invest in any such asset should not be made in reliance on any information herein. Indices and rates cannot be invested in directly. Inclusion of an asset in an index or rate is not a recommendation to buy, sell or hold that asset nor confirmation that any particular investor may lawfully buy, sell or hold the asset or an index or rate containing the asset. The general information contained in this publication should not be acted upon without obtaining specific legal, tax, and investment advice from a licensed professional.

Past performance is no guarantee of future results. Charts and graphs are provided for illustrative purposes only. Index and/or rate returns shown may not represent the results of the actual trading of investable assets. Certain returns shown may reflect back-tested performance. All performance presented prior to the index or rate inception date is back-tested performance. Back-tested performance is not actual performance, but is hypothetical. The back-test calculations are based on the same methodology that was in effect when the index or rate was officially launched. However, back-tested data may reflect the application of the index or rate methodology with the benefit of hindsight, and the historic calculations of an index or rate may change from month to month based on revisions to the underlying economic data used in the calculation of the index or rate.

This document may contain forward-looking assessments. These are based upon a number of assumptions concerning future conditions that ultimately may prove to be inaccurate. Such forward-looking assessments are subject to risks and uncertainties and may be affected by various factors that may cause actual results to differ materially. No member of LSEG nor their licensors assume any duty to and do not undertake to update forward-looking assessments.

No part of this information may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of the applicable member of LSEG. Use and distribution of LSEG data requires a licence from LSEG and/or its licensors.