Ground Rules

February 2024

Russell Developed Large Cap EM GeoExposure Index

v3.0

FTSE RUSSELL
An LSEG Business

lseg.com/en/ftse-russell

Contents

Section 1

Introduction

1. Introduction

1.1 Russell Developed Large Cap EM GeoExposure Index

1.1.1 The Russell Developed Large Cap EM GeoExposure Index seeks to track the performance of Developed Market companies with targeted revenue exposure to Emerging Markets (EM).

1.1.2 FTSE Russell identifies companies with significant economic and market exposure to EM and selects each company in the index based upon its exposure composite score. The exposure composite score reflects the significance of the company's geographic exposure to EM relative to its peer companies. The resulting tradable, modified market capitalisation-weighted index provides clients with insight into companies' geographical exposure to EM while still maintaining traditional index diversification benefits.

1.2 The Russell Developed Large Cap EM GeoExposure Index does not take account of ESG factors in its design.

1.3 Available currencies

1.3.1 The base currency of the benchmark is US Dollars (USD). Index values may also be published in other currencies.

1.4 FTSE Russell

FTSE Russell is a trading name of FTSE International Limited, Frank Russell Company, FTSE Global Debt Capital Markets Limited (and its subsidiaries FTSE Global Debt Capital Markets Inc. and FTSE Fixed Income Europe Limited), FTSE Fixed Income LLC, FTSE (Beijing) Consulting Limited, Refinitiv Benchmark Services (UK) Limited, Refinitiv Limited and Beyond Ratings.

1.4.1 FTSE Russell hereby notifies users of the index series that it is possible that circumstances, including external events beyond the control of FTSE Russell, may necessitate changes to, or the cessation of, the index series and therefore, any financial contracts or other financial instruments that reference the index series or investment funds which use the index series to measure their performance should be able to withstand, or otherwise address the possibility of changes to, or cessation of, the index.

1.4.2 Index users who choose to follow this index series or to buy products that claim to follow this index series should assess the merits of the index's rules-based methodology and take independent investment advice before investing their own or client funds. No liability whether as a result of negligence or otherwise is accepted by FTSE Russell for any losses, damages, claims and expenses suffered by any person as a result of:

- any reliance on this construction and methodology, and/or
- any inaccuracies in this construction and methodology, and/or
- any non-application or misapplication of the policies or procedures described in this construction and methodology, and/or
- any inaccuracies in the compilation of the index or any constituent data.

Section 2

Management responsibilities

2. Management responsibilities

2.1 FTSE International Limited

2.1.1 FTSE is the benchmark administrator of the indices[1].

2.1.2 FTSE Russell is responsible for the daily calculation, production and operation of the index series and will:

- maintain records of the index weightings of all constituents;
- make changes to the constituents and their weightings in accordance with the Ground Rules;
- carry out the periodic index reviews of the index series and apply the changes resulting from the reviews as required by the Ground Rules;
- publish changes to the constituent weightings resulting from their ongoing maintenance and the periodic reviews;
- disseminate the indices.

2.2 Amendments to these Ground Rules

2.2.1 These Ground Rules shall be subject to regular review (at least once a year) by FTSE Russell to ensure that they continue to best reflect the aims of the index series. Any proposals for significant amendments to these Ground Rules will be subject to consultation with FTSE Russell advisory committees and other stakeholders if appropriate. The feedback from these consultations will be considered by the FTSE Russell Index Governance Board before approval is granted.

[1] The term administrator is used in this document in the same sense as it is defined in Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds (the European Benchmark Regulation) and The Benchmarks (Amendment and Transitional Provision) (EU Exit) Regulations 2019 (the UK Benchmark Regulation).

Section 3

FTSE Russell index policies

3. FTSE Russell index policies

These Ground Rules should be read in conjunction with the following policy documents which can be accessed using the links below:

3.1 Queries and Complaints

3.1.1 FTSE Russell's complaints procedure can be accessed using the following link:

Benchmark_Determination_Complaints_Handling_Policy.pdf

3.2 Index Policy for Trading Halts or Market Closures

3.2.1 Guidance for the treatment of index changes in the event of trading halts or market closures can be found using the following link:

Index_Policy_for_Trading_Halts_and_Market_Closures.pdf

3.3 Index Policy in the Event Clients are Unable to Trade a Market or a Security

3.3.1 Details of FTSE Russell's treatment can be accessed using the following link:

Index_Policy_in_the_Event_Clients_are_Unable_to_Trade_a_Market_or_a_Security.pdf

3.4 Recalculation Policy and Guidelines

3.4.1 Where an inaccuracy is identified, FTSE Russell will follow the steps set out in the FTSE Russell Index recalculation guidelines when determining whether an index or index series should be recalculated and/or associated data products reissued. Users of the Russell Developed Large Cap EM GeoExposure Index will be notified through appropriate media.

For further information refer to the FTSE Russell Recalculation policy and guidelines document which is available from the FTSE Russell website using the link below or by contacting info@ftserussell.com.

Recalculation_Policy_and_Guidelines_Equity_Indices.pdf

3.5 Policy for Benchmark Methodology Changes

3.5.1 Details of FTSE Russell's policy for making benchmark methodology changes can be accessed using the following link:

Policy_for_Benchmark_Methodology_Changes.pdf

3.6 FTSE Russell Governance Framework

3.6.1 To oversee its indices, FTSE Russell employs a governance framework that encompasses product, service and technology governance. The framework incorporates the London Stock Exchange Group's three lines of defence risk management framework and is designed to meet the requirements of the IOSCO Principles for Financial Benchmarks[2], the European benchmark regulation[3] and the UK benchmark regulation[4]. The FTSE Russell governance framework can be accessed using the following link:

FTSE_Russell_Governance_Framework.pdf

3.7 Real Time Status Definitions

3.7.1 For indices that are calculated in real time, please refer to the following guide for details of real time status definitions:

Real_Time_Status_Definitions.pdf

[2] IOSCO Principles for Financial Benchmarks Final Report, FR07/13 July 2013.
[3] Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial contracts or to measure the performance of investment funds.
[4] The Benchmarks (Amendment and Transitional Provision) (EU Exit) Regulations 2019.

Section 4

Construction and methodology

4. Construction and methodology

4.1 Defining the eligible universe

The Russell Developed Large Cap EM GeoExposoure Index is derived from the FTSE Developed Index.

4.2 Screening stocks for geographic exposure and determining index membership

4.2.1 The Russell Developed Large Cap EM GeoExposure Index selects companies with significant geographic exposure to Emerging Markets. For details of the geographic exposure estimation methodology, please see Appendix A.

4.2.2 Construction of the Russell Developed Large Cap EM GeoExposoure Index requires the following steps:

1. For each company in the FTSE Developed universe the economic and market exposures to the Emerging Market (EM) segment are determined using the geographic exposure estimations from their most recent annual reports:
   – *Economic Exposure* – the company's total revenue derived from the EM segment in USD;
   – *Market Exposure* – the percentage (%) of the company's revenue derived from the EM segment – i.e. Economic Exposure/Total Revenue in USD.
2. Using the economic and market exposures determined above, an exposure composite score for each company is calculated. The exposure composite score for each company is based on a weighted average of the company's rankings on the following:
   – *Market Exposure (50%)*;
   – *Economic Exposure (25%)*;
   – *Free Float Adjusted Market Capitalisation (25%)*.

   Free float adjusted market capitalisation is based on closing prices & FX rates at the close of the last business day in August and the free float and shares at the open of the Monday after the third Friday in September;

   For each of the above attributes, the members of the underlying index are sorted and ranked in descending order. The composite score for each member is then calculated by taking the weighted average of each of the three rankings. A company's market exposure rank is given a weight of 50%. The company's economic exposure and market capitalisation ranks are each given weights of 25%.
3. Companies are sorted in descending order of their exposure composite score and given a final geographic exposure rank.

Companies are sequentially selected for index membership in order of their final geographic exposure rank until the targeted number of constituents for the index is reached. The target number of constituents for the Russell Developed Large Cap EM Exposure Index is 400.

4.3 Determining index weighting

4.3.1 The Russell Developed Large Cap EM GeoExposure Index employs a modified weighting scheme. The constituents are weighted according to their final geographic exposure ranks. Final geographic exposure ranks are divided by the sum of all constituents' geographic exposure ranks to derive final index weights.

4.3.2 At the annual review, the constituents of Russell Developed Large Cap EM GeoExposure Index are capped at 5 per cent using closing prices, free float and shares in issue at the close of the last business day in August. The capping is implemented after the close of business on the third Friday in September.

4.4 Index reconstitution

4.4.1 The Russell Developed Large Cap EM GeoExposure Index is reviewed annually in September using data at the close of the last business day in August. The review will be implemented after the close of business on the third Friday in September.

4.5 Banding rules

4.5.1 To mitigate unnecessary index turnover, at each rebalance, FTSE Russell implements a 20% banding around the target number of constituents for the Russell Developed Large Cap GeoExposure Index. Existing constituents of the index are selected up to their 480th place and non-constituents are selected in their ranked order until the 400 constituent target is reached.

4.6 Index maintenance/corporate action-driven changes

4.6.1 Full details of changes to constituent companies due to corporate actions and events can be accessed in the corporate actions and events guide for non-market capitalisation weighted indices using the following link:

Corporate_Actions_and_Events_Guide_for_Non_Market_Cap_Weighted_Indices.pdf

Appendix A

Gravity model revenue estimation methodology

Reported data of the geographic breakdown of publicly traded company revenues is often inconsistent. Documents that companies are required to file, such as 10-Ks in the US, give companies wide latitude in how they report the geographic sources of their revenues. If a company wishes to provide transparency, it might list all countries in which it operates along with the revenues from each of those countries. On the other hand, a company might report country and regional revenues. For the latter cases, a methodology is needed to obtain estimates of geographic revenue.

One way to estimate geographic revenue is to use GDP or imports/exports to GDP ratios. These techniques may over or underestimate the sales derived from the market under consideration. For example, the distribution of sales from large companies (by market capitalisation) typically differs from those of small companies. Additionally, GDP and sales ratios incorporate data from all companies and economic activities rather than from just those which are publicly listed.

Gravity Trade Model

The simplest Gravity Trade Model starts with the premise that the flow of trade between two countries i and j is proportional to the economic size (GDP) of the two countries (GDP_i, GDP_j) and inversely proportional to their distance apart, d_{ij}. E.g.

$$Trade\ Flow_{ij} = \beta_0 \frac{GDP_i^{\beta_1} GDP_j^{\beta_2}}{d_{ij}^{\beta_3}} \qquad (1)$$

where the β values are coefficients, usually determined via a regression model such as:

$$\log\left(Trade\ Flow_{ij}\right) = \beta_0 + \beta_1 \log(GDP_i) + \beta_2 \log\left(GDP_j\right) - \beta_3 \log\left(d_{ij}\right) + \varepsilon \qquad (2)$$

If the behavior of the logged residuals is of a concern (i.e., $\mathrm{E}[\log(\varepsilon)] \neq \log(\mathrm{E}[\varepsilon])$) the model can be refactored as:

$$Trade\ Flow_{ij} = e^{\left(\beta_0 + \beta_1 \log(GDP_i) + \beta_2 \log\left(GDP_j\right) - \beta_3 \log\left(d_{ij}\right)\right)} \qquad (3)$$

In general GDP is not a useful measure of economic wealth and GDP per capita provides a better proxy to the purchasing power of a country along with its population.

Additionally, the gravity model described above fails to consider the impact of land borders (adjacency), import tariffs, common languages, customs unions and/or trade agreements, historical, cultural, and political ties. Each of these could represent an additional regressor in the model.

The various relationships mentioned in the previous paragraph can be difficult to quantify and (with the exception of tariffs) are usually included as dummy variables taking a value of 1 (the relationship exists) or 0 (there is no relationship). Whilst there can be some merit in including unknowns in this way, it is still incumbent on the modeler to determine if the relationship exists or not. In complex and dynamic models this may well be an impossible task.

For this reason, our Gravity model incorporates all the unknown, but possible relationships into a combined coefficient $\beta'_{\mathrm{relationship},i,j}$ (as per equation 6) which is obtained as part of the regression. This allows us to capture the behavior of any external factors and ensures that the relationships that do exist evolve in a dynamic way.

The Gravity Trade Model is determined using the aggregate sales from each country i represented in the index (e.g. company domicile) that go to a unique destination country j (these are $Sales_{ij}$ represent the trade flow) and distance between the two countries, the GDP per capita of each country, the population of each country and average applied import tariffs (which account for trade blocs such as EU and NAFTA).

The model is:

$$\log\left(\mathrm{Sales_{ij}}\right) = \beta_0 + \beta_1 \log(\mathrm{GDP\ Per\ Capita_i}) + \beta_2 \log\left(\mathrm{GDP\ Per\ Capita_j}\right) - \beta_3 \log\left(\mathrm{d_{ij}}\right) + \beta_4 \log(\mathrm{Population_i}) + \beta_5 \log\left(\mathrm{Population_j}\right) - \beta_6 \log\left(\mathrm{Tariffs_j}\right) + \varepsilon \qquad (4)$$

To determine the model parameters (β_1 to β_6) a linear regression is used with the following objective function and constraints:

$$\min \sum\nolimits_{j} (\beta D - \log(\mathrm{Sales}))^2 \qquad (5)$$

where D is the design matrix of known regressors.

With the model established it is a simple matter to generate estimates of sales to countries that are not covered by the known sales data using the known values of GDP per capita, distance, population, and tariffs. With these missing data established the regional breakdowns can be determined as a matter of course.

The transparency of the reported sales can vary from year-to-year, and it is assumed that sales from country *i* to *j* are in general not transitory. The relationship between country *i* and *j* determined in the previous two years are combined with the relationship determined in the current year via an exponentially weighted moving average:

$$\beta'_{\mathrm{relationship,i,j}} = 0.834\beta_{\mathrm{relationship,i,j,\ t}} + 0.135\beta_{\mathrm{relationship,i,j,\ t-1}} + 0.031\beta_{\mathrm{relationship,i,j,\ t-2}} \qquad (6)$$

This weighted estimate – $\beta'_{\mathrm{relationship,i,j}}$ – is subsequently used in the estimation of sales from country *i* to *j* in year t.

Appendix B

Further information

A glossary of terms used in FTSE Russell's Ground Rule documents can be found using the following link:

Glossary.pdf

For further information on the Russell Developed Large Cap EM GeoExposure Index visit www.ftserussell.com or e-mail info@ftserussell.com. Contact details can also be found on this website.

For more information about our indices, please visit ftserussell.com.

Disclaimer

The Russell Geographic Exposure Index is calculated by or on behalf of FTSE International Limited or its affiliate, agent or partner. FTSE International Limited is authorised and regulated by the Financial Conduct Authority as a benchmark administrator. Refinitiv Benchmark Services (UK) Limited is authorised and regulated by the Financial Conduct Authority as a benchmark administrator.

FTSE Russell® is a trading name of FTSE, Russell, FTSE Canada, FTSE FI, FTSE FI Europe, WOFE, RBSL, RL and BR. "FTSE®", "Russell®", "FTSE Russell®", "FTSE4Good®", "ICB®", "WMR™", "FR™", "Beyond Ratings®" and all other trademarks and service marks used herein (whether registered or unregistered) are trade marks and/or service marks owned or licensed by the applicable member of LSEG or their respective licensors and are owned, or used under licence, by FTSE, Russell, FTSE Canada, FTSE FI, FTSE FI Europe, WOFE, RBSL, RL or BR.

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.

FTSE RUSSELL
An LSEG Business