

FTSE Thematic Index Series

v1.6



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Section 1

Introduction

1. Introduction

- 1.1 This document sets out the Ground Rules for the construction and management of the FTSE Thematic Index Series.
- 1.1.1 A thematic index is an index which seeks to provide exposure to a theme or concept that in general cannot be captured by traditional classification schemes. Examples of themes are financial technology or “Fintech”, internet of things, and artificial intelligence.
- 1.1.2 Company membership of a theme is determined via a dynamic classification algorithm (see Section 5). The algorithm classifies companies using the relevant data input (see Section 4) and determines via a broad set of relevant keywords which companies are most closely associated with the theme of interest.
- 1.2 Indices are calculated at global, regional, and country levels.
- 1.3 Indices in the FTSE Thematic Index Series are calculated on an end of day basis in US Dollar, UK Pounds Sterling, Euro, Japanese Yen, Australian Dollar, Renminbi (CNY), Hong Kong Dollar, and Canadian Dollar.
- 1.4 Capital return, total return, and net total return indices are published at the end of each working day. The total return indices are based on ex dividend adjustments. All dividends are applied as declared in the FTSE Total Return Index.
- 1.5 The net total return indices are calculated based on the maximum withholding tax rates applicable to dividends received by institutional investors who are not resident in the same country as the remitting company and who do not benefit from double taxation treaties.
- 1.6 Selected indices are calculated and disseminated on a real time basis.
- 1.7 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.
- 1.8 FTSE Russell does not make any representation or warranty, express or implied, as to the accuracy, completeness or correctness of the FTSE Thematic Index Series.
- 1.9 No liability whether as a result of negligence or otherwise is accepted by FTSE Russell (or any person concerned with the preparation or publication of these Ground Rules) for any losses, damages, claims and expenses suffered by any person as a result of:
- any reliance on these Ground Rules, and/or
 - any inaccuracies in these Ground Rules, and/or
 - any non-application or misapplication of the policies or procedures described in these Ground Rules, and/or
 - any inaccuracies in the compilation of the indicative index series or any constituent data.

Section 2

Management responsibilities

2. Management responsibilities

2.1 FTSE International Limited (FTSE)¹

2.1.1 FTSE 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 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.

2.1.2 FTSE is responsible for monitoring the performance of the FTSE Thematic Index Series throughout the day and will determine whether the status of the Index should be firm, closed, indicative or held.

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. 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, Complaints and Appeals

A constituent or prospective constituent security (or professional advisor acting on behalf of the security), a national organisation or a group of no fewer than ten users of the indices from different organisations acting in their professional capacity may appeal against decisions taken by FTSE Russell.

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

[Benchmark Determination Complaints Handling Policy.pdf](#)

FTSE Russell's appeal process can be accessed through the following link:

[Appeals Against Decisions.pdf](#)

3.2 Policy for Benchmark Methodology Changes

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

[Policy for Benchmark Methodology Changes.pdf](#)

3.3 FTSE Russell Governance Framework

3.3.1 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 Benchmarks², the European benchmark regulation³ and the UK benchmark regulation⁴. The FTSE Russell Governance framework can be accessed through the following link:

[FTSE Russell Governance Framework.pdf](#)

3.4 Real Time Status Definitions

3.4.1 Please refer to the following guide for details of real time status definitions for indices which are calculated in real time.

[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

Data requirements

4. Data inputs

4.1 Company descriptions

4.1.1 Worldscope company descriptions (“Business Description - Extended”) are used in the dynamic classification algorithm (Section 5). These descriptions provide details of the primary commercial activities that a company undertakes.

4.1.2 Company descriptions typically consist of short paragraphs that provide an overview of company’s business activities, sourced from information reported by the company. Company descriptions are updated as a company’s activities evolve over time.

4.2 Data cut-off dates

4.2.1 The cut-off date for the inclusion of Worldscope data in the dynamic classification algorithm is the close of business on the second Friday of May.

Section 5

Dynamic classification algorithm

5. The dynamic classification algorithm

5.1 Text processing algorithms

5.1.1 The dynamic classification algorithm uses implementations of two well established algorithms:

1. FastText algorithm, which provides text classification by transforming text into continuous vectors that can be used in language related tasks;
2. Okapi BM25 search algorithm, which ranks the results of a search providing an estimate of the relevance of text documents to the given search query.

5.2 Data preparation

5.2.1 Input text data is processed to:

- A. Remove punctuation;
- B. Convert to lowercase;
- C. Create bi-grams from separate words e.g. United Kingdom to united_kingdom, wind farm to wind_farm.

5.2.2 The preparation of text is a preliminary stage of the keyword identification step (see Rule 5.3)

5.3 Keyword identification

5.3.1 The FastText algorithm is applied on all the historical input data outlined in Section 4. This step creates the learned word embeddings, where words and descriptions are represented as vectors.

5.3.2 Seed words are derived from the theme description (see Section 7) for each target theme. Seed words are then queried through the word embedding model determined in Rule 5.3.1 to identify a broad set of relevant keywords that are commonly associated with the theme. The set of relevant keywords may contain commonly used abbreviations, spelling differences, and associated words.

5.3.3 For each theme, a broad set of relevant keywords is generated. This derived set of relevant keywords are expected to be important to and suitably representing products and services commonly associated with such theme as described in the respective theme description (see Section 7).

5.3.4 This broad set of relevant keywords will be used in Rule 5.4 under the Dynamic classification algorithm to determine theme membership.

5.3.5 Keywords are represented as vectors which provide a mechanism by which keywords and the data input (see Section 4) can be compared.

5.3.6 Keywords will remain unchanged unless the evolution of the theme warrants an update. As themes evolve, the theme descriptions and set of derived seed words may be updated. Consequently, this can result in an updated set of relevant keywords. Such updated theme descriptions and set of relevant keywords will be subject to approval by FTSE Russell.

5.3.7 The approval of new keywords occurs as part of the annual review process of the FTSE Thematic Index Series.

5.4 Determine theme membership

- 5.4.1 After the keyword identification step outlined in Rule 5.3, theme membership is determined using company descriptions of constituents of each eligible universe.
- 5.4.2 Eligible universes for each index in the FTSE Thematic Index Series are outlined in Section 8.
- 5.4.3 The set of keywords determined in Rule 5.3 are used with the Okapi BM25 search algorithm.
- 5.4.4 The search algorithm ranks the data inputs (see Section 4) according to their relevance to the keywords. Companies that have descriptions without any exact keyword matches are **not** included.
- 5.4.5 Cosine similarities are used to measure the relevance of a company description to the target keyword list by:
- i. Determining the target keyword vector, **W**, which is the sum of all the individual keyword vectors (see Rule 5.3.4);
 - ii. Calculating the cosine similarity between each data input (see Section 4) vector **D** and the target keywords vector, **W**, where the cosine similarity is the dot product between **W** and **D**.
- 5.4.6 The Z-score of the cosine similarity is termed the thematic score. Since all possible companies are scored, those less relevant to the theme are deemed to be those with a thematic score < 0 and are excluded.

5.5 Classification exclusions (ICB, NAICS, SIC)

- 5.5.1 Where appropriate, existing classification schemes are used to exclude wholly unrelated classifications. Classification exclusions used for each index can be found in Section 8.

5.6 Classification inclusions (ICB, NAICS, SIC)

- 5.6.1 Where a classification scheme is sufficiently granular, focused and representative of the theme in question, it is used to include all companies with that classification in the theme of interest. Classification inclusions used for each index can be found in Section 8.

5.7 Exclusion list

- 5.7.1 FTSE Russell maintains various exclusion lists of companies. Exclusion lists are based on the impact of companies' conduct or products on society and/or the environment.
- 5.7.2 Where appropriate, existing exclusion lists are used to exclude companies with specific product-related activities. Exclusion list used for each theme or index can be found in Section 8.
- 5.7.3 FTSE Russell's Guide to Construction and Maintenance of FTSE Exclusion Lists can be accessed through the following link:

[Guide to the Construction and Maintenance of FTSE Exclusion Lists.pdf](#)

Section 6

Thematic challenge process

6. Thematic challenge process

- 6.1.1 The thematic challenge process provides a mechanism by which a security's membership of a theme may be challenged.
- 6.1.2 As part of the annual review process, FTSE Russell may identify companies whose description does contain relevant keywords, but whose overall business description does not sufficiently describe activities which justify inclusion to the theme in question. These companies may be excluded from the index if their relevance to the theme is not sufficient.
- 6.1.3 If a user of this index series, a constituent or prospective constituent company (or professional advisor acting on behalf of the company) wishes to challenge a security's membership of a theme or a keyword used they should complete the theme data form which can be found at:

[Thematic Data Form.pdf](#)

The reasons for challenging a security's membership of a theme or keyword used should be stated, having regard to these index ground rules, and attaching any documentary evidence in support of its claim. In considering the claim, FTSE Russell may only take account of publicly available information. The form and any supporting evidence should be sent to FTSE Russell client services at info@ftserussell.com

- 6.1.4 FTSE Russell will review the challenge to a company's membership of a theme as well as the challenge to a keyword based on its own analysis. If a membership removal or keyword change is supported, the change will be announced through a FTSE Russell technical notice. FTSE Russell will implement the removal of the security or keyword change with a minimum of two days' notice. If a change is not supported by FTSE Russell, the complainant will be informed of this outcome via the FTSE Russell client services team with the rationale for the decision.

6.2 The thematic challenge process timing

- 6.2.1 The thematic challenge process is a part of the periodic annual review of the FTSE Thematic Index Series.
- A. However, the challenge mechanism may be instigated at any time in the event there is doubt regarding a company's membership of a given theme is appropriate;
- B. Keyword challenges will be restricted to the periodic annual review per timing indicated in the following paragraphs.
- 6.2.2 Three weeks prior to the third Friday of the review month, the thematic memberships determined in Section 5.4 and list of keywords for each theme determined in Rule 5.3 are announced.
- 6.2.3 A period of one week from the thematic review announcement date is provided to allow challenges to the selected companies and derived keywords to be lodged.
- 6.2.4 Any challenges received are reviewed internally by FTSE Russell and any changes announced by the Wednesday prior to the second Friday of the review month.

Section 7

Theme definitions

7. Theme definitions

7.1 Themes in the FTSE Thematic Index Series are defined using a descriptive paragraph, the theme description.

7.2 The approval of new theme descriptions occurs as part of the annual review process of the FTSE Thematic Index Series.

7.3 The following table outlines the theme descriptions for each theme and the types of companies each theme aims to capture.

Theme	Description
Artificial intelligence	<p>The artificial intelligence theme aims to include companies that provide products and services to facilitate use of artificial intelligence (AI), or are expected to benefit from the utilisation of AI.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Artificial intelligence; – Machine learning; – Data science.
Battery tech	<p>The battery tech theme aims to include companies that design, develop, and provide essential and advanced battery technology. This theme also includes companies focus on energy storage technology or battery charging solution.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Lithium battery; – Fuel cell; – Charging system; – Battery system; – Energy storage.
Cloud computing & services	<p>The cloud computing & services theme aims to include companies that provide hardware, software, data centres, or platforms for cloud computing. This theme also includes cloud-based businesses, companies who build their products upon cloud services, and providers of software-as-a-service products.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Cloud platforms; – Cloud applications; – Software-as-a-service; – Infrastructure-as-a-service; – Data centres.

Theme	Description
Cybersecurity	<p>The cybersecurity theme aims to include companies that provide products and services (hardware and software) to enhance cybersecurity.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Anti-virus software; – Internet security; – Network security; – Cybercrime detection; – Firewalls.
Fintech & blockchain	<p>The fintech & blockchain theme aims to include companies that provide products and services in relation to technological innovation for the financial industry. It also includes companies that employ blockchain technology outside of financial applications. This theme includes transaction processing services and excludes banks.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Financial technology; – Blockchain technology; – Crypto currencies; – Digital payments; – Digital finance/funding.
Future transportation	<p>The future transportation theme aims to include companies that that design, develop, and provide products and services (including but not limited to auto parts and software) for autonomous driving vehicles and/or electric vehicles.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Autonomous driving; – ADAS (Advanced Driver Assistance Systems); – Electric vehicles; – Hybrid vehicles; – Driver assistance.
Health tech	<p>The health tech theme aims to include companies that provide innovative medical equipment or devices, as well as healthcare software or technology solutions. This theme also includes companies engaged in digital health platforms, such as online health consultation.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Medical system; – Medical software; – Surgical technology/solutions; – Digital/online healthcare; – Genetic testing.
Internet of Things (IoT)	<p>The Internet of Things (IoT) theme aims to include companies that research, develop, or provide products or services catering to the IoT both in home and industrial settings.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Intelligent home; – Home automation; – Wearable technology; – Smart meters; – Mesh networks.

Theme	Description
Robotics & automation	<p>The robotics & automation theme aims to include companies that provide robotic and automation hardware, equipment, or solutions. This theme also includes companies that provide software solutions for process or system automation.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Industrial/factory automation; – Robotics; – Automation equipment; – Automation technology/solutions; – Automatic systems.
Semiconductors	<p>The semiconductors theme aims to include companies that design, develop and manufacture products and services for semiconductors. This theme excludes companies that provide products and services catering to clean room system or facilities.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – IC design; – IC manufacturer; – IC assembly & test.
Video gaming	<p>The video gaming theme aims to include companies that develop or provide hardware (including parts), software or platforms for video games or e-sports. The theme excludes casino gaming activities.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Game console/hardware; – Game software; – Online/mobile games; – Game platform/streaming; – E-sports.
Virtual reality (VR)	<p>The virtual reality (VR) theme aims to include companies that provide products and services in relation to virtual or augmented reality (AR) applications, or benefit from the usage of VR/AR.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Virtual reality hardware/software; – Augmented reality hardware/software; – Mixed reality hardware/software; – VR/AR content development; – VR/AR applications.
Solar energy	<p>Solar energy is defined as energy that created by the light and heat of the sun, which mainly includes solar photovoltaic and solar thermal. The solar energy theme aims to include companies that research, develop, utilise or provide product or services that related to solar energy.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Solar power equipment; – Solar power production, storage and distribution; – Solar power solutions and system; – Solar power technology development.
Wind energy	<p>Wind energy is defined as energy that generated by harnessing the wind. The wind energy theme aims to includes companies that research, develop, utilise or provide product or services related to wind energy.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Wind farms management and development; – Wind power equipment; – Wind power production, storage and distribution; – Wind power solutions and system; – Wind power technology development.

Theme	Description
Biofuel	<p>Biofuel is defined as energy that generated from the conversion of biomass into heat, electricity, biogas, and liquid fuels. Biomass resources include crop waste, forest residues, purpose-grown grasses, woody energy crops, microalgae, urban wood waste, food waste, etc. The biofuel theme aims to include companies that research, develop, utilise or provide product or services that related to biofuel.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Biofuel equipment; – Biofuel production, storage and distribution; – Biofuel solutions and system; – Biofuel technology development.
Hydropower	<p>Hydropower is defined as energy that generated from moving water. The Hydropower theme aims to include companies that research, develop, utilise or provide product or services that related to hydropower</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Hydropower equipment; – Hydropower facilities and infrastructure; – Hydropower production, storage and distribution; – Hydropower solutions and system; – Hydropower technology development.
Geothermal energy	<p>Geothermal energy is defined as energy generated from the Earth. It is a renewable energy source with multiple applications including heating, drying and electricity generation. The geothermal energy theme aims to include companies that research, develop, utilise or provide product or services that related to geothermal energy.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Geothermal energy equipment; – Geothermal energy production, storage and distribution; – Geothermal energy solutions and system; – Geothermal energy technology development.
Nuclear power	<p>Nuclear power is defined as energy generated from nucleus, which can be used to produce heat and electricity. Uranium is the most widely used resources for nuclear reactions. The nuclear energy theme aims to includes companies that research, develop, utilise or provide product or services related to nuclear power. The theme excludes companies engaging in nuclear weapon business.</p> <p>The theme includes but is not limited to companies focused on the following:</p> <ul style="list-style-type: none"> – Nuclear power plant construction and management; – Nuclear power equipment; – Nuclear power production, storage and distribution; – Nuclear power solutions and system; – Nuclear power technology development; – Uranium mining, exploration and production.

Section 8

Eligible securities

8. Eligible securities

8.1 The eligible universe of securities in the FTSE Thematic Index Series and a list of available indices are detailed in the table below.

Indices	Eligible universe
Global thematic indices	FTSE Global All Cap Index
Russell thematic indices	Russell 3000 Index

Theme	Global thematic indices	Russell thematic indices
Single theme		
Artificial intelligence	FTSE Global Artificial intelligence Index	Russell Artificial intelligence Index
Battery tech	FTSE Global Battery Tech Index	N/A
Cloud computing & services	FTSE Global Cloud Computing & Services Index	Russell Cloud Computing & Services Index
Cybersecurity	FTSE Global Cybersecurity Index	Russell Cybersecurity Index
Fintech & blockchain	FTSE Global Fintech & Blockchain Index	Russell Fintech & Blockchain Index
Future transportation	FTSE Global Future Transportation Index	N/A
Health tech	FTSE Global Health Tech Index	Russell Health Tech Index
Internet of Things (IoT)	FTSE Global Internet of Things Index	Russell Internet of Things Index
Robotics & automation	FTSE Global Robotics & Automation Index	N/A
Semiconductors	FTSE Global Semiconductors Index	Russell Semiconductors Index
Video gaming	FTSE Global Video Gaming Index	N/A
Solar energy	FTSE Global Solar Energy Index	Russell Solar Energy Index
Wind energy	FTSE Global Wind Energy Index	N/A
Biofuel	FTSE Global Biofuel Index	N/A
Hydropower	FTSE Global Hydropower Index	N/A
Nuclear power	FTSE Global Nuclear Power Index	N/A

Theme	Global thematic indices	Russell thematic indices
Multi-theme		
Artificial intelligence (AI); Cloud computing & services; Cybersecurity; Fintech & blockchain; Future transportation; Internet of Things; Robotics & automation; Semiconductors ⁽¹⁾ ; Video gaming; Virtual reality (VR)	FTSE Global Technology SuperTheme Index	Russell Technology SuperTheme Index
Artificial intelligence (AI); Video gaming; Virtual reality (VR)	FTSE Global Metaverse Index	Russell Metaverse Index
Solar energy; Wind energy; Biofuel; Hydropower; Geothermal energy; Nuclear power	FTSE Global New Energy Index	Russell New Energy Index

(1) Added to relevant SuperTheme indices in June 2022 review.

8.2 Default inclusions

8.2.1 Default inclusions are securities or classifications automatically included in a theme or an index as detailed in the table below. Single themes and multi-themes not indicated in the table below do not apply specific default inclusions.

8.3 Default exclusions

8.3.1 All thematic Index Series will exclude ICB sectors.

- 302030 Mortgage Real Estate Investment Trusts;
- 302040 Closed End Investments;
- 302050 Open End and Miscellaneous Investment Vehicles;
- 351020 Real Estate Investment Trusts.

8.3.2 Default exclusions are securities or classifications automatically excluded from a theme or an index as detailed in the table below. Single themes and multi-themes not indicated in the table below do not apply specific default exclusions.

Single theme indices will apply the default inclusions and exclusions of its relevant theme:

Single-theme	Default inclusion	Default exclusion
Fintech & blockchain	ICB Subsector 50205015 (Transaction Processing Services)	ICB Subsector 30101010 (Banks)
Health tech	ICB Subsector 20102010 (Medical Equipment)	N/A
Semiconductors	ICB Subsector 10102010 (Semiconductors)	N/A
Video gaming	N/A	ICB Subsector 40501020 (Casino and Gambling)
Wind energy	N/A	ICB Supersector 3030 (Insurance)
Nuclear power	N/A	ICB Industry 20 (Health Care) FTSE Nuclear Weapons Exclusion List

Multi-theme indices will apply the default inclusions and exclusions of all underlying themes. In addition, these indices will apply further default inclusions and exclusions of its relevant multi-theme:

Multi-theme	Default inclusion	Default exclusion
New energy	ICB Subsector 60102010 (Alternative Fuels) ICB Subsector 60102020 (Renewable Energy Equipment) ICB Subsector 65101010 (Alternative Electricity)	N/A

Section 9

Periodic review of constituents

9. Periodic review of constituents

9.1.1 The FTSE Thematic Index Series will be reviewed annually in June using price data as of the Wednesday before the first Friday of the review month, with constituents as of the Monday following the third Friday of the review month for indices based on the FTSE Global All Cap and in line with the Russell reconstitution for indices derived from the Russell 3000.

9.1.2 The review will be implemented (review implementation date) after the close of business on the third Friday of the review month for indices based on the FTSE Global All Cap Index, and on the same date as the Russell annual reconstitution for indices derived from the Russell 3000.

9.2 Constituent selection - theme membership

9.2.1 Constituents in a FTSE Thematic Index are determined by their membership of a theme. The theme membership is determined using the:

- i. Dynamic classification algorithm outlined in Section 5, and;
- ii. Thematic challenge process described in Section 6.

9.2.2 Existing constituents in a FTSE Thematic Index are retained in the index provided their description continues to identify their relevance to the theme and they remain eligible in the underlying index.

9.3 Multiple lines

9.3.1 For companies with multiple listed lines, only the largest line, by free float market capitalisation, as of the data cut-off date, is included in the relevant FTSE Thematic Index.

9.4 Constituent weighting at the annual review

9.4.1 Constituents in a FTSE Thematic Index are liquidity weighted using the median traded value over the past 3 calendar months prior to data cut-off date.

9.4.2 Index constituent weights at the annual review are capped at 5%. Constituent weights less than the minimum threshold of 5 basis points are removed from the index. Excess weights are redistributed pro-rata to the remaining constituents. This process iterates until no constituent breaches the weighting limit.

9.5 Constituent weighting in September, December, and March

9.5.1 Index constituent weights are additionally capped on a quarterly basis in September, December and March, based on their index weights, to limit the maximum constituent weight at 5%. Excess weights are redistributed pro-rata to the remaining constituents. This process iterates until no constituent breaches the weighting limit.

9.5.2 The calculation of the September, December and March constituent weighting factors (c) will be based on prices at close on the second Friday of the review month using shares in issue and investability weights as designated to take effect after close on the third Friday of the review month (i.e. effective from the open the following Monday).

- 9.5.3 The calculation will take into account any corporate actions/events that take effect after close on the second Friday of the review month up to and including the review effective date if they have been announced and confirmed by the second Friday of the review month.
- 9.5.4 Corporate actions/events announced after the second Friday of the review month that become effective up and including the review effective date will not result in any further adjustment.
- 9.5.5 For constituents of indices that do not trade on Friday, the previous day's closing prices are used and the capping implemented after close on the third Friday of the review month (i.e. effective from the open the following Monday).
- 9.6 As part of the capping process if the number of constituents falls below 20, the index will be equally weighted using the calculation of $1/n$ for each constituent weight, where n is the number of constituents in the FTSE Thematic Index.
- 9.7 Index decommissioning**
- 9.7.1 At the annual review of the FTSE Thematic Index Series, if the number of constituents in a FTSE Thematic Index falls below 20 for two consecutive reviews, that index will be decommissioned. A notice period of one year will be provided if an index has less than 20 constituents, to warn that the index may be decommissioned at the next annual review.

Section 10

Changes to constituent companies

10. Changes to constituent companies

10.1 Intra-review additions

10.1.1 Additions to the underlying indices, changes in ICB Classification, or changes in the FTSE Exclusion Lists will be considered for inclusion at the next annual review of the FTSE Thematic Index Series.

10.2 Intra-review deletions

A constituent will be deleted from a FTSE Thematic Index if removed from their underlying indices, have a change in ICB Classification, or have a change in the FTSE Exclusion Lists, which deems a company ineligible (see Section 8), in the event of corporate actions and events covered in Section 10 or of securities which are subject to surveillance by stock exchanges. Such securities will be deleted from their respective FTSE Thematic Index in line with their removal from the underlying index, change in ICB classification or change in the FTSE Exclusion Lists.

Section 11

Corporate actions and events

11. Corporate actions and events

11.1 If a constituent has a stock split, stock consolidation, rights issue, bonus issue, a change in the number of shares in issue or a change in free float, the constituent's weighting in the FTSE Thematic Index Series index will remain unchanged pre and post such an event.

11.2 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 cap weighted indices through the following link:

[Corporate Actions and Events Guide for Non Market Cap Weighted Indices.pdf](#)

A corporate 'action' is an action on shareholders with a prescribed ex date. The share price will be subject to an adjustment on the ex date. These include the following:

- Capital repayments;
- Rights issues/entitlement offers;
- Stock conversion;
- Splits (sub-division)/reverse splits (consolidation);
- Scrip issues (capitalisation or bonus issue).

A corporate 'event' is a reaction to company news (event) that may impact the index depending on the index rules. For example, a company announces a strategic shareholder is offering to sell their shares (secondary share offer) – this could result in a free float weighting change in the index. Where an index adjustment is required FTSE Russell will provide notice advising of the timing of the change.

11.3 Suspension of dealing

Suspension of dealing rules can be found within the corporate actions and events guide for non-market cap weighted indices.

11.4 Takeovers, mergers and demergers

The treatment of takeovers, mergers and demergers can be found within the corporate actions and events guide for non-market cap weighted indices.

Section 12

Indices algorithm and calculation methodology

12. Indices algorithm and calculation methodology

12.1 Prices

12.1.1 The FTSE Thematic Index Series will use actual last trade prices, where available, for securities.

12.1.2 Refinitiv real-time exchange rates are used in the real-time index calculations.

12.2 Index calculation

12.2.1 The FTSE Thematic Index Series calculation formula is as follows:

$$\sum_{i=1}^N \frac{(p_i \times e_i \times s_i \times f_i \times c_i)}{d}$$

Where,

- $i=1,2,\dots,N$;
- N is the number of securities in the index;
- p_i is the latest trade price of the component security (or the price at the close of the index on the previous day);
- e_i is the exchange rate required to convert the security's currency into the index's base currency;
- s_i is the number of shares in issue used by FTSE Russell for the security, as defined in these Ground Rules;
- f_i is the investability weighting factor to be applied to a security to allow amendments to its weighting, expressed as a number between 0 and 1, where 1 represents a 100% free float. This factor is published by FTSE Russell for each security in the underlying index;
- c_i is the weighting factor to be applied to a security to correctly weight that security in the index. This factor maps the investable market capitalisation of each stock to a notional market capitalisation for inclusion in the index;
- d is the divisor, a figure that represents the total issued share capital of the index at the base date. The divisor can be adjusted to allow changes in the issued share capital of individual securities to be made without distorting the index.

Appendix A

Further information

Further information on the FTSE Thematic Index Series is available from FTSE Russell.

For contact details please visit the FTSE Russell website or contact FTSE Russell client services at info@ftserussell.com.

Website: www.lseg.com/en/ftse-russell/

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