

Indexing the world

From local to global

When international portfolio investment started to take off in the 1980s, most existing indexes proved an inadequate tool to map the global stock market.

The design of many early equity indexes reflected the technological and computing constraints of the time. Such indexes were intended to serve more as a general information tool than as the basis for professional investment management. For example, both the price-weighted Dow Jones Industrial Average, created in 1896, and the FT-30 geometric average index, launched in 1935, had limited practical uses for portfolio managers.

But even the market capitalisation-weighted country indexes developed in the 1960s, such as the widely used FT-Actuaries All-Share index (now the FTSE All-Share), and its equivalents in other equity markets, did not necessarily serve the global investor.

“Local stock market indexes are not sufficient in themselves to provide the fund manager and adviser with all the tools needed to assist in their international investment, especially if certain stocks on the market are not freely available to overseas investors,” noted Eric Short, a Financial Times journalist and actuary, in 1987¹.

For some time in the 1980s, said Short, investment firms, the Investment Research Committee of the Institute and Faculty of Actuaries and the Financial Times had all independently been thinking about the creation of a new world equity index, calculated on the basis of a new and consistent set of principles, to meet the needs of international investors.

¹ “Assessing World Stock Markets: The Design, Calculation and Production of the Financial Times–Actuaries World Indices”, Eric Short, FIA, presentation to the Faculty of Actuaries Students’ Society, November 1987.

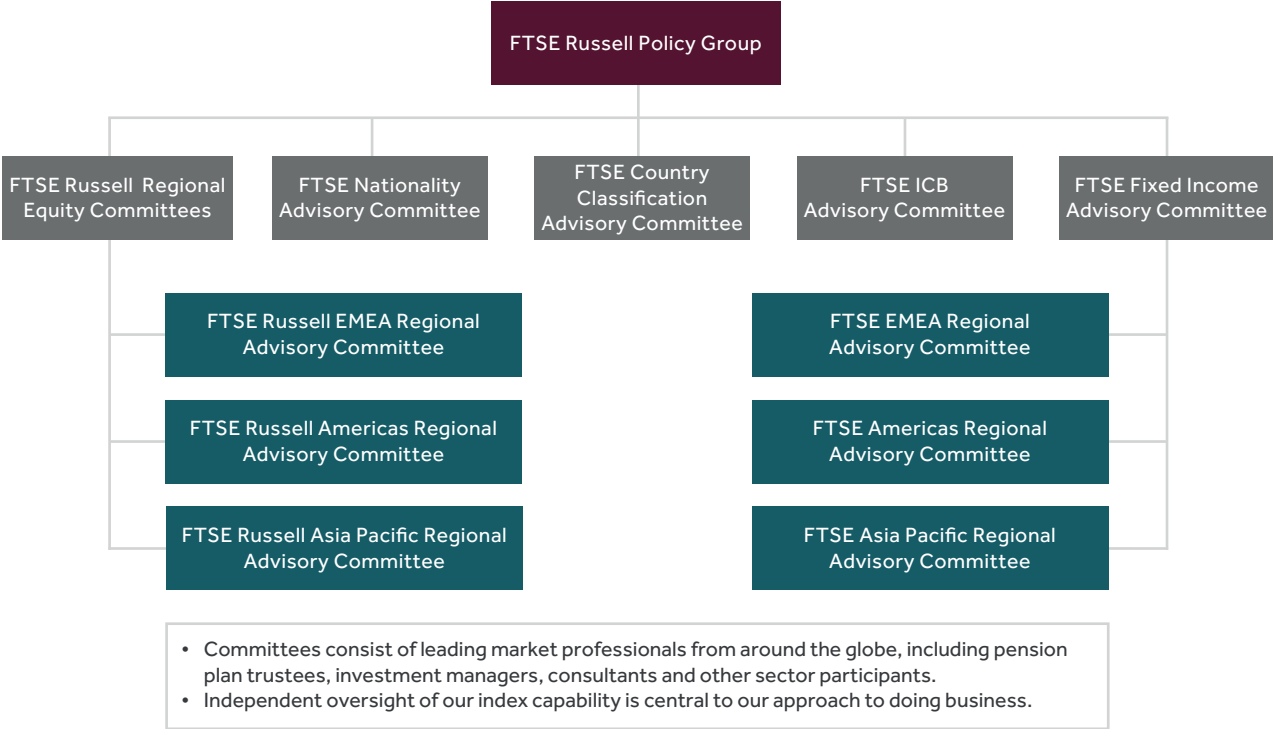
Once the three parties started talking to another and collaborating, said Short, the Financial Times Actuaries (FT-Actuaries) World indexes were soon brought into existence.

From their launch in 1987, the FT-Actuaries World indexes (now the FTSE Global Equity Index Series) were supervised by a diverse group of professionals, ensuring that the indexes met the needs of different market participants. Initially, the indexes were compiled by the Financial Times, Goldman Sachs and stockbroker Wood Mackenzie.

The first Policy Group, responsible for ensuring that the indexes remained independent, broad, accurate and objective, was constructed with such diversity in mind. It included representatives of the three compilers, two members from the Institute and Faculty of Actuaries and three members from international investment and advisory firms. From the start, the Policy Group also sought to ensure that the index rules were transparent and easily understandable by market participants.

The governance of FTSE Russell indexes is still in the hands of independent external experts, although some questions of policy (for example regarding regional index design, companies' nationality, the classification of countries and industries) are now in the hands of specialist sub-committees.

External Governance of FTSE Russell indexes



Source: FTSE Russell

Increasing coverage and a more codified methodology

In 1987 the FT-Actuaries World indexes were focused primarily on the larger companies within each country market. This was achieved by setting a target of at least 70% coverage of the aggregate value of all listed equities in each local market, and at least 10% (and up to 30%) by number of the available companies in each market.

To ensure that index constituents were sufficiently liquid, these targets were subject to a minimum market size threshold, set at US\$100 million in 1987. In countries where the average market capitalisation was below this level, the average capitalisation was used as the cut-off point. Primarily to prevent US companies from dominating the FT-Actuaries World Index, the Policy Group also set an ad hoc limit of 600 constituents from any one country.

At the outset, country selection involved a considerable degree of judgement by the Policy Group.

In 1987, according to Eric Short, the principle for inclusion was that “the countries to be included in the [FT-Actuaries] World Indexes were those with an established stock market with viable, reliable stock prices and company data”. Nevertheless, some countries initially fell short of the requirements; Finland, for example, was only admitted to the FT-Actuaries World index a year after its launch because of doubts about the reliability of the country’s published company data.

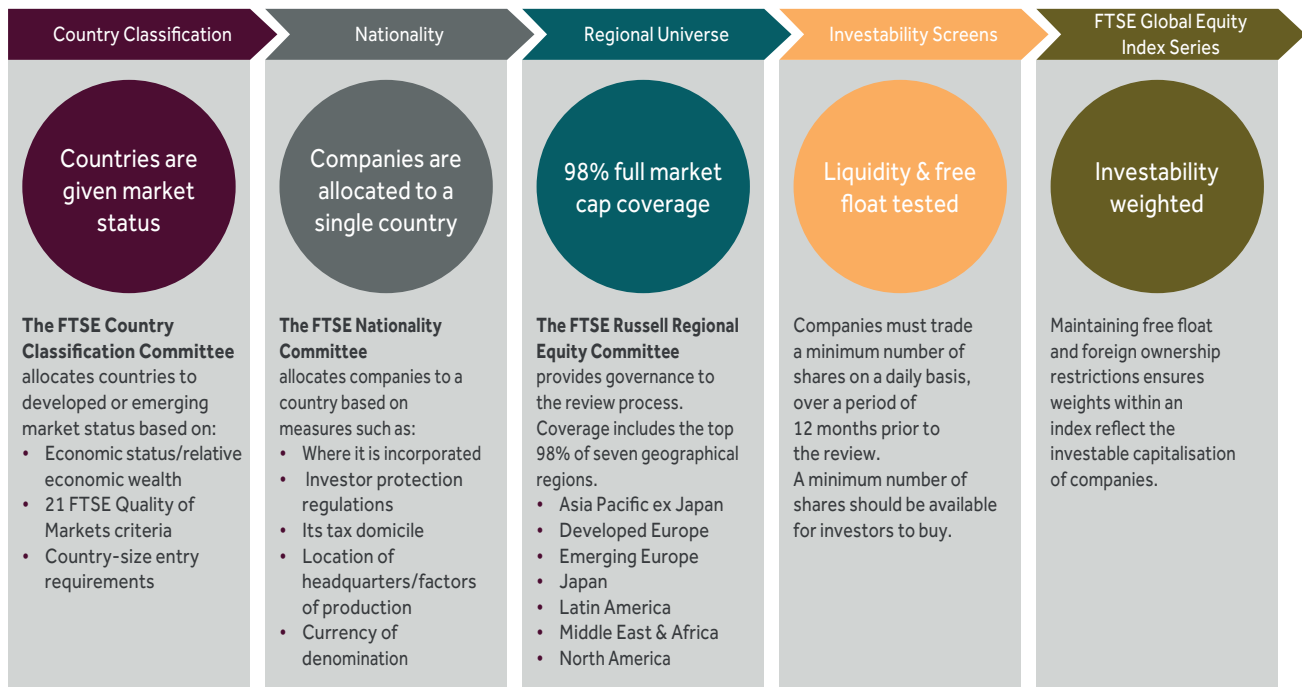
Over time, FTSE’s world indexes have evolved to be constructed by more codified and rigorous principles. In particular:

- Countries are now included in the FTSE Global Equity Index Series if classified as developed or emerging by FTSE’s Country Classification Committee (see below)
- Rather than focussing on the largest companies, the index series now aims explicitly to encompass large-, medium- and small-capitalisation stocks, subject to liquidity screens and an adjustment for investability (see below)
- As a result, the coverage of FTSE’s Global Equity Index Series has expanded from 23 countries in 1987 to 47 countries in 2015, reaching over 98% of the world’s market capitalisation
- The allocation of stocks to large-, mid- and small-capitalisation segments is now decided on a regional, rather than country basis, reflecting asset allocation practice amongst professional portfolio managers²
- Companies are assigned a single nationality based on a number of factors, set out by FTSE’s Nationality Committee³
- Companies are screened for liquidity before admission to the FTSE Global Equity Index Series
- Investability weightings ensure that free float and foreign ownership restrictions are reflected in the index.

² Within each of seven geographical regions, the top 70% of stocks by market value is allocated to the large-capitalisation segment, the next 20% to mid caps and the bottom 10% to small caps, subject to buffer zones around each cut-off point to minimise index turnover.

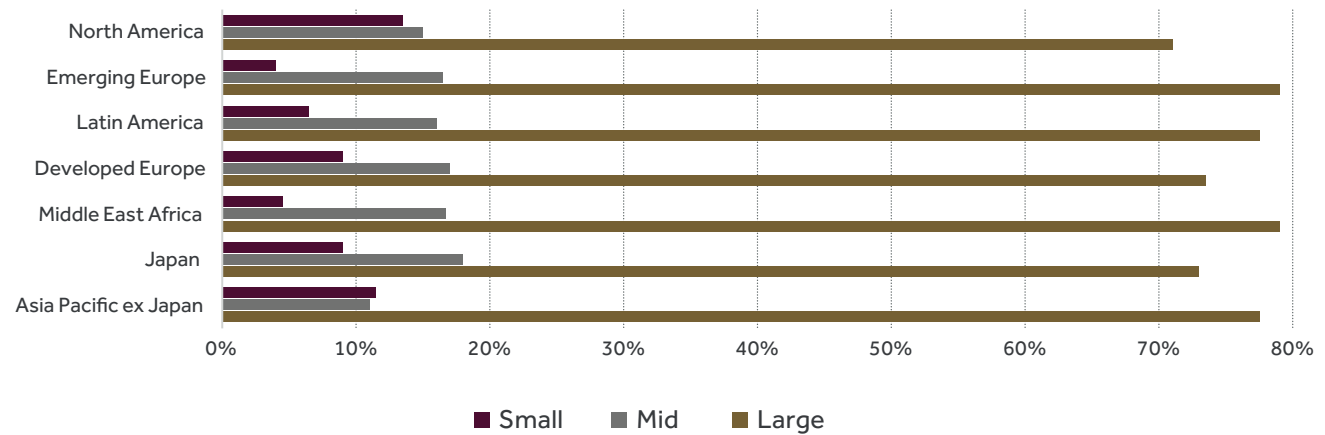
³ See http://www.ftse.com/products/downloads/Determining_Nationality.pdf for details of this process.

The FTSE Global Equity Index Series Construction Process



Source: FTSE Russell

FTSE Global Equity Index Series—Size Allocation by Region



Source: FTSE Russell, as at March 31, 2015.

The FT-Actuaries World indexes were ahead of their time in adopting some of the principles of index construction that are now taken for granted, such as reflecting free float: in other words, reducing the proportion of a company's shares that are included in the index to reflect constraints on access.

In 1987, wrote Eric Short, "where there are legal constraints on the proportion of a company's issued shares that can be held by overseas investors, then only that precise amount of capital that is available is taken for that constituent" in the FT-Actuaries World indexes.

British Aerospace, whose shares were floated in 1987 by the UK government with a 15% limit on foreign ownership, was an early example of such a free float adjustment in the indexes.

The country classification process

Since 2003, following the conclusion of an extensive consultation process with over 100 institutional investors, FTSE Russell has followed a formal country classification process to allocate equity markets to one of four development categories: developed, advanced emerging, secondary emerging and frontier. Countries within the first three categories are eligible for inclusion in the FTSE Global Equity Index Series. Frontier markets are covered by a separate set of benchmarks (the FTSE Frontier Index Series).

FTSE is advised on country classification by the FTSE Country Classification Advisory Committee, which meets annually in September. A further interim review takes place each March. The committee is charged with ensuring that classifications within the FTSE Global Equity Index Series remain up-to-date and reflect the needs of index users.

The FTSE Country Classification Advisory Committee also maintains and communicates watch lists of countries likely to move between development categories, enabling index users to monitor possible future changes. Watch lists encourage countries seeking outside capital to adapt their local securities markets in accordance with global best practice.

FTSE's country classification process follows these guiding principles:

- **Relative Economic Wealth:** an initial screening ranks countries by their gross national income per capita, using World Bank data
- **Quality of Markets:** a matrix of criteria, encompassing governance and the quality of local securities markets, is used to determine a market's eligibility for inclusion in a global benchmark⁴
- **Materiality:** to qualify for inclusion in the FTSE Global Equity Index Series, a country should be of material size
- **Consistency and Predictability:** in order for investors to anticipate changes in countries' development status, FTSE publishes a watch list of countries whose status or eligibility is under review
- **Cost Limitation:** where possible, the index provider should seek to minimise changes in development status in order to limit costs
- **Stability:** the introduction of new countries into an index should follow a phased approach
- **Market Access:** international investors must be able to invest in and disinvest from a local stock market in a timely and secure manner

FTSE's Quality of Markets criteria set minimum standards with which countries must comply if wishing to qualify for one of the four development categories within the country classification process.

There are standard scorings for countries to qualify for particular levels of development status: a country should meet 21 specified Quality of Markets criteria to be classified as a developed market, 15 criteria to be classified as advanced emerging, nine as secondary emerging and five as a frontier market.

⁴ FTSE's Quality of Markets matrix is published at <http://www.ftse.com/products/indices/country-classification>

Indexing by capitalisation, country/region, sector and development status

Over time, FTSE's global equity indexes have evolved to meet increasing investor demand for specialisation and precision in market coverage.

In 1987 the FT-Actuaries World indexes included indexes for the 23 countries initially admitted by the Policy Group, 9 regional indexes, 36 industry group indexes and 7 economic sector indexes. The indexes included 2,400 equities classified as "globally investable".

The FTSE Global Equity Index Series now includes:

- Around 7,600 large-, mid- and small-cap stocks worldwide (via the FTSE Global All-Cap indexes)
- Around 3,000 large- and mid-cap stocks (via the FTSE All-World indexes) and around 4,600 small-cap stocks (via the FTSE Global Small Cap indexes)
- 47 country indexes and a wide range of regional indexes
- Global sector indexes (10 industries, 19 supersectors, 41 sectors and 114 subsectors)
- Indexes for development categories (FTSE World indexes for developed and advanced emerging countries, FTSE Developed, FTSE Emerging, FTSE Advanced Emerging and FTSE Secondary Emerging indexes)

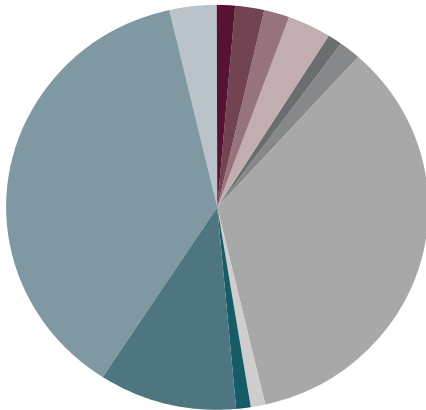
A changing global equity market

The indexes within the FTSE Global Equity Index Series are weighted by their constituents' market capitalisation. As a result, the country weightings of leading indexes within the series reflect the changing valuations of individual global equity markets. A notable change during the last 30 years has been the declining size of Japan's equity market.

In September 1987, Japan represented 34.7% of the FT-Actuaries World Index, just short of the 37.1% aggregate weighting of US companies. By April 2015, Japanese large and mid-cap stocks represented just 7.3% of the FTSE All-World index, compared with a near 50% weighting for US stocks. The increasing dominance of US stocks was achieved despite a doubling in the number of countries represented in the index (from 23 in 1987 to 47 in 2015).

Who knows how the indexes' country weightings will look in 2045?

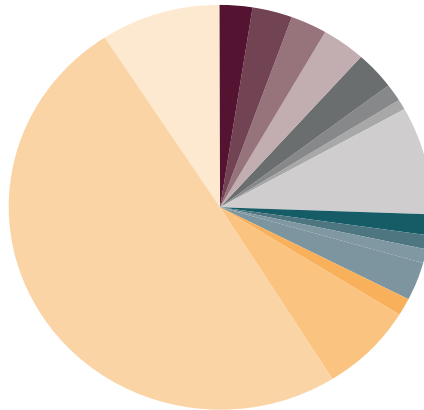
FT-Actuaries World Index Country Weightings in 1987



- Australia
- Canada
- France
- Germany
- Hong Kong
- Italy
- Japan
- Netherlands
- Switzerland
- UK
- USA
- Others

Source: FTSE Russell. FT-Actuaries World Index Country Weightings, September 30, 1987.

FTSE All-World Index Country Weightings in 2015



- Australia
- Canada
- China
- France
- Germany
- Hong Kong
- India
- Japan
- Korea
- Spain
- Sweden
- Switzerland
- Taiwan
- UK
- USA
- Others

Source: FTSE Russell. FTSE All-World Index Country Weightings, April 30, 2015.

Pricing the index

A stock index has to be calculated at a single point in time. The designers of the FT-Actuaries World Index intended its value to capture all the calendar day's movements in world stock exchanges' share prices. The value of the index was therefore calculated daily, immediately after the close of the New York Stock Exchange, using the day's stock exchange closing prices from around the world.

Fortuitously, this also allowed the value of the index to be calculated in time to be printed in the next day's *Financial Times* (but only in the third of the three morning editions of the FT⁵).

However, there was one exception to the rule of capturing the day's stock exchange price movements. In 1987, Mexico's exchange closed three hours after New York's, meaning that Mexican share price values were included in the index with a one-day lag.

In 2015, indexes within the FTSE Global Equity Index Series are still calculated daily after the New York close (at around 21.30-22.00 London time), although the Mexican anomaly has now disappeared.

Reflecting advances in technology, however, an increasing number of indexes within the series is calculated on a real-time basis, using real-time stock exchange

⁵ The edition number of each morning's *Financial Times* is marked by the number of stars at the bottom left of the newspaper's front page.

prices (where markets are open, otherwise the last closing prices) and real-time foreign exchange rates.

FTSE Global Equity Index Series: Indexes Calculated in Real Time

Index	Calculation times*
FTSE Global All-Cap Index	00:30 to 21:10
FTSE Global All-Cap ex US Index	00:30 to 21:10
FTSE Global All-Cap ex UK Index	00:30 to 21:10
FTSE Global All-Cap ex Japan Index	00:30 to 21:10
FTSE Global All-Cap ex South Africa Index	00:30 to 21:10
FTSE Asia Pacific All-Cap Index	00:30 to 13:30
FTSE Asia Pacific All-Cap ex Japan Index	00:30 to 13:30
FTSE Asia Pacific All-Cap ex Japan, India & Pakistan Index	00:30 to 11:00
FTSE Asia Pacific All-Cap ex Japan, India, Pakistan, Australia & New Zealand Index	00:30 to 11:00
FTSE Greater China All-Cap Index	00:30 to 09:15
FTSE Europe All-Cap Index	08:00 to 16:30
FTSE Europe All-Cap ex UK Index	08:00 to 16:30
FTSE Europe All-Cap ex Eurobloc Index	08:00 to 16:30
FTSE Eurobloc All-Cap Index	08:00 to 16:30
FTSE Developed All-Cap Index	00:30 to 21:10
FTSE Developed All-Cap ex US Index	00:30 to 21:10
FTSE Developed All-Cap ex North America Index	00:30 to 16:30
FTSE Developed All-Cap ex UK Index	00:30 to 21:10
FTSE Developed All-Cap ex Japan Index	00:30 to 21:10
FTSE Developed Europe All-Cap Index	08:00 to 16:30
FTSE Developed Europe All-Cap ex UK Index	08:00 to 16:30
FTSE Japan All-Cap Index	00:30 to 06:45
FTSE Emerging All-Cap Index	00:30 to 21:10
FTSE Emerging Latin America All-Cap Index	14:30 to 21:10
FTSE Emerging Asia Pacific All-Cap Index	00:30 to 13:30
FTSE Advanced Emerging All-Cap Index	00:30 to 21:10
FTSE Secondary Emerging All-Cap Index	01:00 to 21:10

*Note: Timings are UK hours. Indexes that disseminate until 21:10 will have the closing value disseminated at 21:30.

Source: FTSE Russell

Meeting the needs of global equity investors

Since 1987, the uses of global equity indexes have expanded enormously. In particular, index-based portfolio management has grown steadily; as at March 2015, over 300 exchange-traded funds (ETFs) use indexes from the FTSE Global Equity Index Series as their performance targets, issued by over 40 asset management companies and with assets under management of US\$148 billion.

For index portfolio managers, managers of ETFs and participants in the global equity index derivatives markets, accurate advance information on index reviews, news and changes is critical. 24 indexes from within FTSE Global Equity Index Series are covered by "Event Monitor" files, which provide index users with information about review schedules, events at a country and benchmark level, a calendar of forward-looking index changes, events, constituent code changes, corporate actions and dividends.

Some uses of world equity indexes haven't changed, however. According to Eric Short, in 1987 the new FT-Actuaries World indexes were intended to "provide a historic record of performance, indicate to investors the availability of world equity markets, be used in equity market research and analysis, meet a growing demand for index and core funds and provide a basis for portfolio performance measurement". This summary of the broad uses of equity indexes has stood the test of time.

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

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About FTSE Russell

FTSE Russell is a leading global provider of benchmarking, analytics and data solutions for investors, giving them a precise view of the market relevant to their investment process. A comprehensive range of reliable and accurate indexes provides investors worldwide with the tools they require to measure and benchmark markets across asset classes, styles or strategies.

FTSE Russell index expertise and products are used extensively by institutional and retail investors globally. For over 30 years, leading asset owners, asset managers, ETF providers and investment banks have chosen FTSE Russell indexes to benchmark their investment performance and create ETFs, structured products and index-based derivatives.

FTSE Russell is focused on applying the highest industry standards in index design and governance, employing transparent rules-based methodology informed by independent committees of leading market participants. FTSE Russell fully embraces the IOSCO Principles and its Statement of Compliance has received independent assurance. Index innovation is driven by client needs and customer partnerships, allowing FTSE Russell to continually enhance the breadth, depth and reach of its offering.

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