

Guide to Calculation Methods for the UK Series of the FTSE Actuaries Share Indices



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SECTION 1

1.0 PURPOSE OF THE GUIDE

1.1 The aims of the guide are:

- (a) to describe how the indices are calculated;
- (b) to make it easier for users to replicate the indices in order to support their investment and trading activities; and
- (c) to assist users in understanding the component factors which influence the performance of the indices.

SECTION 2

2.0 STATEMENT OF PRINCIPLES

- 2.1 The guiding principles behind the calculation methods described in the guide are:
- (a) the indices and index statistics are produced primarily for use in analysing investment strategies and as a measure of portfolio performance for professional investors such as pension funds, insurance companies and other institutional investors;
 - (b) all calculations are based on declared dividends;
 - (c) the calculation methods should reflect reality wherever practical;
 - (d) the indices should be capable of being replicated by users. The calculation methods should not, therefore, be over-complex or use data not readily available;
 - (e) only historic data should be used in calculating the index statistics;
 - (f) data used in the indices should originate from an authoritative source. Wherever possible, data published in audited accounts and other public statements from companies (including interim statements) will be used with minimal amendment;
 - (g) continuity with the past should be retained wherever possible;
 - (h) consistency of calculation methods and data should be maintained wherever practical;
 - (i) market practitioners from among both investors and brokers should be actively involved in determining 'best practice' to be used in the calculation of the indices and in ensuring that the indices continue to meet current market needs;
 - (j) The views of users from around the world should be represented on our practitioner committees. Our decisions should be consensus driven wherever possible;
 - (k) Decisions should be taken independent of any single interest group. The interests of investors, analysts and constituent companies will be balanced in managing the indices;
 - (l) The indices should be transparent and predictable;
 - (m) In applying stock events the position of the underlying portfolio should be accurately reflected;
 - (n) Occam's razor. Wherever possible the simple and practical approach should be preferred;
 - (o) The primary purpose of the indices is to reflect movements in the underlying market accurately.

SECTION 3

3.0 UK INDEX CALCULATION METHOD

- 3.1 The FTSE Actuaries UK Share Indices are arithmetic weighted indices where the weights are the market capitalisation of each company. The price index is the summation of the market values (or capitalisations) of all companies within the index and each constituent company is weighted by its market value (shares-in-issue multiplied by share price multiplied by investability weighting, which is usually 1.00). The price movement of a larger company (say, representing five per cent of the value of the index) will, therefore, have a larger effect on the index than a smaller company (say, representing one per cent of the value of the index).
- 3.2 The formula used for calculating the indices is straightforward. However, determining the capitalisation of each constituent company and calculating the capitalisation adjustments to the index are more complex. The index value itself is simply a number which represents the total market value of all companies within the index at a particular point in time compared to a comparable calculation at a starting point. The daily index value is calculated by dividing the total market value of all constituent companies by a number called the divisor. The divisor is an arbitrary number chosen at the starting point of the index to fix the index starting value (say, at 100.0). The divisor is then adjusted when capitalisation amendments are made to the constituents of the index allowing the index value to remain comparable over time.

$$\frac{\text{Total market value of all companies}}{\text{Latest index divisor}} = \text{Index Value}$$

- 3.3 A simple example of the calculation method is as follows. Please note, these calculations are to be used only as examples and where necessary numbers have been rounded for simplicity. Actual index calculations are undertaken to sufficient significant figures to ensure these do not occur.

Step 1 Calculate the capitalisation of constituent companies at starting date				
<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	270.0	61,443	1.00	165,896.10
B plc	605.0	22,579	1.00	136,602.95
C plc	968.0	9,229	1.00	89,336.72
Total Market Value				391,835.77

SECTION 3

Step 2 Set starting value of index (say, 100)**Step 3 Calculate index divisor on the starting date**

$$\begin{aligned} \text{Index divisor} &= \frac{\text{Total Market Value}}{\text{Index Value}} \\ &= \frac{391,835.77}{100.0} \\ &= 3918.36 \end{aligned}$$

Step 4 Calculate the capitalisation of constituent companies on the end date (day 2)

<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	283.0	61,443	1.00	173,883.69
B plc	588.0	22,579	1.00	132,764.52
C plc	945.0	9,229	1.00	87,214.05
				393,862.26
Total Market Value				393,862.26

Step 5 Calculate index value at end date

$$\begin{aligned} \text{Index Value} &= \frac{\text{Total Market Value}}{\text{Index Divisor}} \\ &= \frac{393,862.26}{3,918.36} \\ &= 100.5 \end{aligned}$$

Index Value

$$\begin{aligned} \text{- Start date} &= 100.0 \\ \text{- End date} &= 100.5 \end{aligned}$$

SECTION 3

- 3.4 The index divisor can be used to quickly calculate the impact of an event on an index. The effect of a change in the price of a constituent company expressed in index points is calculated as follows:

$$\left(\frac{\text{Shares-in-Issue}}{\text{Index Divisor}} \times \text{Change in Share Price} \times \text{Free Float Factor} \right) / 100$$

Using the previous example:

<u>Company</u>	<u>Shares-in-Issue</u> (m)	<u>Price Change</u> (p)	<u>Free Float Factor</u>	<u>Effect in Index Points</u>
A plc	61,443	13.0	1.00	2.04
B plc	22,579	-17.0	1.00	-0.98
C plc	9,229	-23.0	1.00	-0.54
Total Change in Index Points				0.52

- 3.5 Similarly, the market value of a rise or fall in an index can be calculated using the index divisor as follows:

Change in Index Points x Index Divisor

Using the same example again, the market value of the gain in the index is:

$$= 0.52 \times 3918.36$$

$$= \text{£}2,037.55\text{m}$$

SECTION 4

4.0 DIVIDENDS AND EARNINGS STATISTICS

A range of dividends and earnings statistics on the FTSE Actuaries UK Share Indices is published daily in the Financial Times.

4.1 Dividend Yield

4.1.1 Dividend yields are a widely used measure of the income return on a stock or index. The sources of the data are the company announcements service from the London Stock Exchange and official company notices. FTSE applies a free float adjustment to dividend yields (please see Ground Rules for the Management of The UK Series of the FTSE Actuaries Share Indices Rule 4.5 for further information regarding free float). Since April 1999, the declared dividend of a company has been used to produce an "actual yield". No gross yields have been calculated since April 5 1999.

4.1.2 Dividends announced prior to 16.30 hours are included in the dividend yield calculations that day. Any announcements after this time are entered the following day along with adjustments made for interim dividends. If the dividend is announced in a currency other than sterling, the 4pm WM Reuters closing rate on the day the dividend is declared is used to convert the dividend into sterling. If the company announces a sterling equivalent this announced figure is used. Practices which determine how different dividend situations should be treated are set out in Appendix B.

4.2 Earnings Calculations

4.2.1 Earnings are an important element in valuing a company. The treatment of earnings in the calculation of statistics on the FTSE Actuaries UK Share Indices is based on the companies' own published data. Traditionally, few adjustments to such data have been made. However, in recent years, accounting treatments have become more complex and subjective. The Headline Earnings formula issued by the Institute of Investment Management & Research (IIMR) in response to FRS3 is now used in the calculation of the earnings statistics (see Appendix C) in order to reflect the trading performance of companies on a standardised basis.

4.2.2 A tax adjusted earnings number is derived from a company's most recent audited report and accounts by taking tax liabilities expected to be paid and tax credits expected to be received for the current year fully into account for the purpose of calculating corporate earnings for that year.

4.3 'As Reported' vs. 'As Earned' Calculations

4.3.1 The earnings statistics for the FTSE Actuaries UK Share Indices are calculated on an 'as reported' basis (i.e. they reflect the last reported year's earnings and interims when published) and represent the sum of the latest two half years' earnings. This differs from most brokers' calculations which are normally calculated on an 'as earned' basis (i.e. they are based on current forecast earnings). This will result in timing differences between the two series of numbers, particularly during times in the economic cycle where there are significant upward or downward adjustments in earnings. It should also be noted that losses are included in the earnings calculations on the FTSE Actuaries UK Share Indices.

SECTION 4

4.4 Tax Adjustments to Earnings Arising from IIMR Guidelines

4.4.1 Where a company discloses the tax consequences of individual items in the report and accounts, these will form the basis of any tax adjustments made. Where a company makes no specific disclosure, but where an adjustment is required, the guiding principle will be to apply the average rate of tax on the FRS3 profits to any adjustment made.

4.5 Actual Dividend Cover

4.5.1 The dividend cover shows the ability of the company to meet dividend payments from its current earnings. The conventional method for calculating dividend cover is:

$$\frac{\text{Actual Earnings adjusted for free float}}{\text{Actual Dividends adjusted for free float}}$$

4.6 P/E Ratio

4.6.1 The price-earnings (P/E) ratio is an indication of the price investors are willing to pay in relation to the company's earnings. The ratio is calculated using net earnings, as calculated under the IIMR Headline Earnings formula, and is the total market value of all constituent companies divided by the sum of the net earnings of all index constituents. The calculation formula is set out in Appendix A.

4.7 Scrip Dividends

4.7.1 Scrip issues in lieu of cash dividends are treated as bonus issues and are not included in dividend or yield calculations. The shares are added to the index on the ex-date.

4.7.2 Cash dividends with a scrip alternative are treated as if fully taken as cash and therefore an xd adjustment for the full cash amount is applied. Any shares issued are added to the index when they are listed, subject to the 1% rule (see UK Series Ground Rule 9.1).

4.8 Special Dividends (Capital Repayment)

4.8.1 When a company pays a special dividend, the market capitalisation of that company is adjusted by the value of the dividend and the total market capitalisation will fall accordingly. The index divisor is adjusted to maintain a constant index value. The change is explained showing the impact of Company A plc having a special dividend of 70p.

SECTION 4

Step 1 Index as at close

<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	283.0	61,443	1.00	173,883.69
B plc	588.0	22,579	1.00	132,764.52
C plc	945.0	9,229	1.00	87,214.05

Total Market Value				393,862.26
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Index Value = $\frac{\text{Total Market Value}}{\text{Latest Index Divisor}}$

100.5 = $\frac{393,862.26}{3,918.36}$

Step 2 Adjust company A plc share price by 70p

<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	213.0	61,443	1.00	130,873.59
B plc	588.0	22,579	1.00	132,764.52
C plc	945.0	9,229	1.00	87,214.05

				350,852.16
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Step 3 Calculate New Divisor

New Divisor = $\frac{\text{Total Market Value}}{\text{Index Value}}$

New Divisor = $\frac{350,852.16}{100.5}$

= **3,491.07**

SECTION 5

5.0 TOTAL RETURNS

The Total Return Indices (TRIs) were introduced in July 1993. Using both the price and total return indices, investors have a reliable guide to both the capital performance and reinvested income returns.

5.1 Ex-Dividend Adjustment

5.1.1 The ex-dividend (xd) adjustment represents the value of dividends declared by constituent companies on the xd date expressed in index points. The xd adjustment for the FTSE Actuaries UK Share Indices is published daily in the FT on a cumulative basis for the calendar year. Xd adjustments are based on declared dividends. The xd adjustment is calculated as follows:

$$\frac{\text{Market Value of Dividends}}{\text{Latest Index Divisor}}$$

5.1.2 If a company declares a dividend in a currency other than Sterling, the published Sterling equivalent will be used, if available. If there is no Sterling equivalent, the dividend will be converted to Sterling using the WM/Reuters 4PM rate the day before the stock goes xd.

5.1.3 Using the previous example, if A plc and B plc each declared a dividend payment with an xd date of today, the following calculation would occur:

<u>Company</u>	<u>Dividend</u> (p)	<u>Shares</u> (m)	<u>Market</u> <u>Value</u> (£m)	<u>Free Float</u> <u>Factor</u>	<u>xd</u> <u>adjustment</u> (points)
A plc	12.56	61,443	7,717.2	1.00	1.97
B plc	14.00	22,579	3,161.0	1.00	0.81
					2.78
Total xd adjustment for Index Index divisor = 3,918.36					

5.1.4 The method for calculating the xd adjustment uses the divisor as at the close of business on the preceding day after implementing any capitalisation changes. Where a company has more than one line of shares included in the indices, the xd adjustment is calculated separately for each line. However, where an eligible secondary line is too small to be included in the indices, the xd adjustment is calculated using the dividends paid on the main line and the combined share weighting.

SECTION 5

5.2 Calculation of the Total Returns Indices (TRIs)

- 5.2.1 The Total Returns Indices (TRIs) measure the total return on the underlying indices, combining both capital performance and reinvested income. The TRIs are calculated using declared dividends. Although in reality there is a timing delay between the xd date and the receipt of dividends (payment date), it is considered preferable to assume all income is reinvested on the xd date rather than incur the complications of allowing a time lag before reinvestment of the declared dividends.
- 5.2.2 The TRIs are calculated in real time daily. The calculation method will vary according to whether any dividends are declared xd on a given day. The following table and examples explain how the calculation is performed.

	<u>Capital Index (CI)</u>	<u>xd Adjust (XD)</u>	<u>TRI</u>
Day 1	3190	-	1000.00 *
Day 2	3200	-	1003.13
Day 3	3220	5	1010.98
* starting value			
Where no xd adjustment occurs:			
	TRI	=	Previous TRI x $\frac{\text{Today's CI}}{\text{Previous CI}}$
Day 2	TRI	=	1000.00 x $\frac{3200}{3190}$
		=	1003.13
Where an xd adjustment occurs:			
	TRI	=	Previous TRI x $\frac{\text{Today's CI}}{(\text{Previous CI} - \text{XD})}$
Day 3	TRI	=	1003.13 x $\frac{3220}{(3200 - 5)}$
		=	1010.98

SECTION 5

5.3 Free Float Adjustment

- 5.3.1 Free float is the proportion of shares tradable within the market place for a given stock. For further details of what is and is not considered tradable, please see the Ground Rules for the FTSE Actuaries UK Index Series. The free float adjustment which FTSE makes within its indices is to cope with situations where a party owns a proportion of a line of stock and that proportion is unlikely to be for sale. An example would be that, at the time of writing, Dixons owns 78.92% of its subsidiary Freeserve (i.e. a controlling share) this would lead to a free-float of 21.08% of this stock, which would be banded to 30%.
- 5.3.2 Free float is not purely restricted to which listed companies own what proportion of other listed companies but also take into consideration interests held by other parties. An example of this case could be Gary Wesland, who owns 53% of Associated British Foods. This would lead to a possible free-float of 50%.
- 5.3.3 The calculation of the investability weight will use the following algorithm:

BW_{t-1} = Width of Free-Float Band (previous)

B_{t-1} = Free-Float Banded Value (previous)

ff_{t-1} = Free-Float (previous)

ff_t = Free-Float (current)

R = Total Free-Float Restriction

R_D = Domestic Free-Float Restriction

R_F = Foreign Free-Float Restriction

F_I = Foreign Ownership Restriction (Investible (%))

F_N = Foreign Ownership Restriction (Non-Investible (%))

I_w = Investible Free-Float adjusted Index Weighting (current)

I_{w-1} = Investible Free-Float adjusted Index Weighting (previous)

$$\left[R = R_D + R_F \right] \left[100 = F_I + F_N \right] \left[F_I \geq R_F \right]$$

SECTION 5

We will be testing the inequality: $F_I - R_F \leq 100 - (R_F + R_D) = 100 - R$

This can be simplified by adding R_F either side of the equation, to give:

$$F_I \leq 100 - R_D$$

Now to show only the Non-Investible portion of the Foreign Ownership Restriction, we simply substitute F_I with $100 - F_N$ to give:

$$100 - F_N \leq 100 - R_D$$

This is further simplified by taking 100 and multiplying either side of the inequality by -1, to give:

$$F_N \geq R_D$$

[CASE 1]

If $F_N \geq R_D$

Then $100 - F_N - R_F$ takes precedence

$ff_t = 100 - F_N - R_F \Rightarrow$ GO TO BANDING ALGORITHM

If $I_w \leq 100 - F_N$, Then $ff_t = I_w \Rightarrow$ EXIT

Else $ff_t = 100 - F_N \Rightarrow$ EXIT

[CASE 2]

Else If $F_N < R_D$

Then $100 - R$ takes precedence

$ff_t = 100 - R \Rightarrow$ GO TO BANDING ALGORITHM

If $I_w \leq 100 - F_N$, Then $ff_t = I_w \Rightarrow$ EXIT

Else $ff_t = 100 - F_N \Rightarrow$ EXIT

SECTION 5

5.4 Free Float Banding Algorithm

if (exists ff_{t-1}) and not (exists B_{t-1}) then $B_{t-1} = ff_{t-1}$

if not (exists ff_{t-1}) or ($ff_t \leq 15\%$) or ($ff_t + 5 < B_{t-1} - BW_{t-1}$) or ($ff_t > B_{t-1} + 5$)

then

$ff_t \leq 5\%$; $I_{W_t} = 0\%$, $B_t = 0\%$, $BW_t = 0\%$
$5\% < ff_t \leq 15\%$; $I_{W_t}^* = 0\%$, $B_t^* = 0\%$, $BW_t^* = 0\%$
$15\% < ff_t \leq 20\%$; $I_{W_t} = 20\%$, $B_t = 20\%$, $BW_t = 5\%$
$20\% < ff_t \leq 30\%$; $I_{W_t} = 30\%$, $B_t = 30\%$, $BW_t = 10\%$
$30\% < ff_t \leq 40\%$; $I_{W_t} = 40\%$, $B_t = 40\%$, $BW_t = 10\%$
$40\% < ff_t \leq 50\%$; $I_{W_t} = 50\%$, $B_t = 50\%$, $BW_t = 10\%$
$50\% < ff_t \leq 75\%$; $I_{W_t} = 75\%$, $B_t = 75\%$, $BW_t = 25\%$
$75\% < ff_t$; $I_{W_t} = 100\%$, $B_t = 100\%$, $BW_t = 25\%$

else

$$I_W = I_{W^{-1}}$$

$$I_{W_{t+\delta t}}^* = B_{t+\delta t}^* \in \mathbb{Z} \quad [6\%, 15\%]; \quad BW_{t+\delta t}^* = 1\%$$

$t + \delta t$ = next review date.

\mathbb{Z} = 'Rounded-Up' Integer

* Please see Ground Rules for the Management of the UK Series of the FTSE Actuaries Share Indices 4.5.

SECTION 5

5.5 Implementing Changes to Free Float Bandings

- 5.5.1 **Corporate events:** changes to free float (subject to the buffers - please see the Ground Rule 4.5 of the FTSE Actuaries UK Index Series for details) will be applied on the effective date of the corporate event. Where possible, users will be notified via the standard pre-announcements issued by FTSE. If no pre-announcement has been made by the constituent company, changes to free float bandings will still be applied on the effective date of the corporate event and will be announced on the day prior to the effective date.
- 5.5.2 **Advance warning of sales of restricted equity:** if FTSE is alerted to a change in a restricted holding, the change to the free float (subject to the five percentage points threshold) will be made as close as possible to the timing of the event and announced accordingly.
- 5.5.3 **Retrospective sales of restricted equity:** if FTSE is alerted to a historic change in a restricted holding, the change to the free float (subject to the five percentage points threshold) will be made and four working days notice will be provided accordingly.
- 5.5.4 **Greenshoes:** those shares potentially to be offered as a greenshoe will not be included in the initial calculation of the free float of a company offering shares to the market. Following the offering, if the greenshoe option is exercised, these shares will be treated as free float and the company's investability weighting adjusted, in accordance with rules 5.3.4 and 5.4, above.
- 5.5.5 Investability weight changes, other than those arising from corporate actions and corporate events, resulting from the collation of data gathered by or supplied to FTSE intra review, for constituents incorporated in countries other than those specifically under review in a given quarter will usually be accumulated throughout each quarter. Any such changes will be announced via an additional technical notice and identified as intra review changes, the announcement will usually be made after the index review technical notice announcements pertaining to scheduled country review changes, and made effective after the close of business on the third Friday of March, June, September and December.

SECTION 6

6.0 CAPITALISATION ADJUSTMENTS

The market capitalisation of a company determines its weighting in the FTSE Actuaries UK Share Indices. The market capitalisation is the product of the latest price multiplied by the current share weighting.

6.1 Share Weighting

6.1.1 Unless the FTSE Europe /Middle East / Africa Regional committee deems it inappropriate, a premium listed secondary line will be considered for index inclusion if its full market capitalisation, i.e. before the application of any investability weightings, is greater than 25% of the full market capitalisation of the company's principal line and the secondary line is eligible, in its own right. Should the full market capitalisation of a secondary line, which is already a constituent of the FTSE All-Share Index or the FTSE Fledgling Index, fall below 20% of the full market capitalisation of the company's principal line at an annual review, the secondary line will be deleted from the relevant index unless its full market capitalisation remains above the qualification level for continued inclusion as a constituent of the FTSE All-Share Index at that review.

Where a company has partly paid shares, these shares, together with the outstanding call(s), are both included in the index. Warrants to purchase ordinary shares and convertible securities are not included in the indices until they are exercised or converted

6.2 Share Weighting Changes

6.2.1 For the purposes of computing the FTSE UK Index Series, the number of shares in issue for each constituent security is expressed to the nearest share and, to prevent a large number of insignificant weighting changes, the number of shares in issue for each constituent security is amended only when the total shares in issue held within the index system changes by more than 1% on a cumulative basis. Changes will be made quarterly after the close of business on the third Friday of March, June, September and December (subject to 6.2.2 and 6.2.3).

6.2.2 If a corporate action is applied to an index constituent which involves a change in the number of shares in issue, the change in shares will be applied simultaneously with the corporate action.

6.2.3 If accumulated changes in the number of shares in issue add up to 10% or more or when an accumulated share change represents USD 2bn of a company's total market capitalisation, they are implemented between quarters. A minimum of 4 days notice will be given to users of the index. WM/Reuters Spot Rates will be used to convert the market capitalisation into USD. The USD 2bn threshold may be adjusted annually in June by the FTSE Equity Indices Committee. If an adjustment is made, it will be applied for the first time at the next review in September of the following year.

6.2.4 All adjustments are made before the start of the index calculation on the day concerned, unless market conditions prevent this.

SECTION 6

6.2.5 Shares in Issue Increase

When a company increases the number of shares it has in issue, the market capitalisation of that company increases and the total market capitalisation will rise accordingly. The index divisor is adjusted to maintain a constant index value. The change is explained showing the impact of Company A plc having a 700 million shares in issue increase.

Step 1 Index as at close				
<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	283.0	61,443	1.00	173,883.69
B plc	588.0	22,579	1.00	132,764.52
C plc	945.0	9,229	1.00	87,214.05
Total Market Value				393,862.26
Index Value	=	$\frac{\text{Total Market Value}}{\text{Latest Index Divisor}}$		
100.5	=	$\frac{393,862.26}{3,918.36}$		
Step 2 Adjust company A plc shares in issue by 700m				
<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	283.0	62,143	1.00	175,864.69
B plc	588.0	22,579	1.00	132,764.52
C plc	945.0	9,229	1.00	87,214.05
				395,843.26
Step 3 Calculate New Divisor				
New Divisor	=	$\frac{\text{Total Market Value}}{\text{Index Value}}$		
New Divisor	=	$\frac{395,843.26}{100.5}$		
	=	3,938.74		

SECTION 6

6.3 Weighting Amendments

6.3.1 The market capitalisation of a company is adjusted to take account of various corporate actions. To prevent the value of an index changing due to such an event, all corporate actions which affect the market capitalisation of the index require an offsetting divisor adjustment. By adjusting the divisor, the index value remains constant before and after the event. Below is a summary of the more frequent corporate actions and their resulting adjustment.

<u>Type of Corporate Action</u>	<u>Adjustment</u>	<u>Adjustment to Divisor</u>
Issue of new shares	Share weighting increased	Yes
Share repurchase	Share weighting decreased	Yes
Bonus issue or stock split (i.e. 4 x 1)	Share weighting multiplied by four Share price divided by four	No

SECTION 6

6.3.2 Shares in Issue Decrease (Buy-Back)

When a company decreases the number of shares it has in issue, the market capitalisation of that company decreases and the total market capitalisation will fall accordingly. The index divisor is adjusted to maintain a constant index value. The change is explained showing the impact of Company A plc having a 700 million shares in issue decrease.

Step 1 Index as at close				
<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	283.0	61,443	1.00	173,883.69
B plc	588.0	22,579	1.00	132,764.52
C plc	945.0	9,229	1.00	87,214.05
Total Market Value				393,862.26
Index Value	=	$\frac{\text{Total Market Value}}{\text{Latest Index Divisor}}$		
100.5	=	$\frac{393,862.26}{3,918.36}$		
Step 2 Adjust company A plc shares in issue by 700m				
<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	283.0	60,743	1.00	171,902.69
B plc	588.0	22,579	1.00	132,764.52
C plc	945.0	9,229	1.00	87,214.05
				391,881.26
Step 3 Calculate New Divisor				
New Divisor	=	$\frac{\text{Total Market Value}}{\text{Index Value}}$		
New Divisor	=	$\frac{391,881.26}{100.5}$		
	=	3,899.32		

SECTION 6

6.4 Company Additions and Deletions

6.4.1 When a company is added to or deleted from the index, the market capitalisation of that company is added to or deleted from the index and the total market capitalisation will rise or fall accordingly. The index divisor is adjusted to maintain a constant index value. The change can be explained using the previous example.

Step 1 Index as at close on day 2				
<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	283.0	61,443	1.00	173,883.69
B plc	588.0	22,579	1.00	132,764.52
C plc	945.0	9,229	1.00	87,214.05
				393,862.26
Total Market Value				
Index Value	=	$\frac{\text{Total Market Value}}{\text{Latest Index Divisor}}$		
100.5	=	$\frac{393,862.26}{3,918.36}$		
Step 2 Remove C plc and insert D plc				
<u>Company</u>	<u>Share Price</u> (p)	<u>Shares-in-Issue</u> (m)	<u>Free Float Factor</u>	<u>Market Value</u> (£m)
A plc	283.0	61,443	1.00	173,883.69
B plc	588.0	22,579	1.00	132,764.52
D plc	2,026.0	3,649	1.00	73,928.74
				380,576.95
Total Market Value				
Step 3 Calculate New Divisor				
New Divisor	=	$\frac{\text{Total Market Value}}{\text{Index Value}}$		
New Divisor	=	$\frac{380,576.95}{100.5}$		
	=	3,786.84		

SECTION 6

6.5 Rights Issues

6.5.1 A rights issue is where a company raises new capital by offering shareholders additional shares at a set ratio with a discount to the market price (for example, a company whose shares are trading at 420p offers shareholders one new share for every five held at a discount price of 390p). The rights become attached to the shares on a set date - the ex-date. On this date, the price of the company's underlying shares will fall by the value of the rights. The effect of the rights issue is to increase the market capitalisation of the company by the value of the additional shares created by the rights issue less the value of the fall in the share price. The theoretical share price adjustment is calculated as follows:

Adjustment to share price for rights issue:

$$\left(\frac{\text{Number of rights to buy one new share} \times \text{Market price before ex-date}}{\text{Number of rights to buy one new share} + 1} \right) + \text{rights price}$$

Using the above example:

$$\frac{(5 \times 420) + 390}{5 + 1} = 415\text{p}$$

SECTION 6

6.5.2 The share weighting of the company and index divisor are also adjusted to prevent the index falling in line with the reduction in the share price on the ex-date as follows:

Adjustment to index for rights issue:

Step 1 Reduce the company's share price as shown above

Step 2 Increase the company's share weighting to include the new shares created by the rights issue (the example below assumes 500m shares prior to the rights issue)

$$\left(\frac{\text{Number of rights to buy one new share} + 1}{\text{Number of rights to buy one new share}} \right) \times \frac{\text{Shares in issue pre rights take-up}}{\text{Number of rights to buy one new share}}$$

Using the previous example:

$$\frac{(5 + 1) \times 500\text{m}}{5} = 600\text{m}$$

NOTE The old capitalisation of the company would be £2,100m (500m x 420p) and the new capitalisation would be £2,490m (600m x 415p). £390m has therefore been raised through the rights issue

Step 3 Calculate new divisor

$$\text{Latest Divisor} = \frac{\text{Total Market Value}}{\text{Index Value}}$$

$$\text{New Divisor} = \frac{\text{Total Market Value} + \text{Value of Rights}}{\text{Index Value}}$$

Using previous examples:

$$\begin{aligned} \text{New Divisor} &= \frac{380,576.95 + 390}{100.5} \\ &= 3790.72 \end{aligned}$$

Please note treatment for Rights Issue (non-underwritten): In the event that the market price is equal to or below the rights offer price at the close of business immediately before trading ex-dividend, no adjustments will be made. In this circumstance, any resulting new shares will only be added to the index weighting once the take-up proportion is known and together with any associated change to the company's free float.

SECTION 7

7.0 REVIEW PROCESS

- 7.1 It has been the practice of the FTSE Committees to involve market practitioners in the active operation and development of the indices and to keep the indices under regular review to ensure that they develop in line with market changes.
- 7.2 The indices are reviewed using data from the close of the index calculation on the Tuesday after the first Friday of June for those indices reviewed annually; and the Tuesday after the first Friday of March, June, September and December for those reviewed quarterly.
- 7.3 With reference to liquidity rule 4.9 (c), only exchange trading days will be included in the calculation of the 20 day cut-off i.e. exchange holidays will be excluded. The cut-off will be calculated back from the date of the data used to conduct the review i.e. the close of business on the Tuesday after the first Friday of March, June, September and December.
- 7.4 With reference to liquidity rule 4.9 (c), the annual liquidity test will be carried out over a period starting from May 1 in the previous year to April 30 in the current year.
- 7.5 When testing the liquidity of existing constituents of an index, the banded free float weight as at the last date in the period of liquidity to be tested will be used for the calculation for the whole of that period.
- 7.6 Reserve List stocks: in the event that only 3 Reserve List stocks remain available for the FTSE 100 Index and only 6 remain available for the FTSE 250 Index, FTSE will publish an additional 3 and 6 Reserve List stocks for each index respectively. The companies will be selected using the rankings determined at the previous quarterly review, but will be re-ranked using prices two days prior to the deletion of a constituent. The additional Reserve List stocks will only be referred to once all the original Reserve stocks have been used.

7.7 Determination of the FTSE All-Share Cut-off at the Annual Reviews

- 7.7.1 The cut-off for the FTSE SmallCap Index (and thus for the FTSE All-Share Index) is determined at the annual review in June. In order to determine the new cut-off each year, the performance of the FTSE Small Cap Index over the previous year is calculated. If, for example the cut-off the previous year was set at £67m, and the index value has increased by 10%, the previous year's cut-off (i.e. 67m) will be increased by 10% accordingly.

SECTION 7

- 7.7.2 Calculate 115% of this new cut-off figure. Any Fledgling, Monitored, or newly eligible companies which rank above the 115% band will automatically be added to the FTSE SmallCap Index. To determine the companies that will be deleted from the FTSE SmallCap Index, calculate 85% of the new cut-off. Any SmallCap constituents and Monitored companies that rank beneath this point are added to the FTSE Fledgling Index (i.e. these companies are therefore not included in the FTSE All-Share Index). Monitored companies ranking between the cut-off and the 115% band are added to the FTSE SmallCap Index, subject to their passing the investability screens (Fledgling companies remain unchanged). Monitored companies ranking between the cut-off and the 85% band are added to the FTSE Fledgling Index (Small Cap companies remain unchanged).
- 7.7.3 All additions to the FTSE SmallCap Index are subject to passing the required investability screens e.g. free float, liquidity. There are no liquidity requirements for entry to the FTSE Fledgling Index.

SECTION 8

8.0 FURTHER INFORMATION

- 8.1 Further information on the FTSE UK Index Series is available from FTSE, who will also welcome comments on these Ground Rules and on the Index Series.

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

Web site: www.ftse.com

CALCULATION FORMULAE

The indices are based upon the chained Paasche method, the formulae for calculating the indices and index statistics described in this paper are set out below:

Index Calculation (UK Indices)

$$\sum_1^n \frac{((p_i \bullet e_i) \bullet s_i \bullet f_i)}{d}$$

$$n = 1, 2, 3, \dots, n$$

<i>n</i>	=		The number of securities in the Index.
<i>p</i>	=	Price	The latest trade price of the component security (or the price at the close of the Index on the previous day)
<i>e</i>	=	Exchange Rate	The exchange rate required to convert the security's home currency into the index's base currency.
<i>s</i>	=	Shares in Issue	The number of shares in issue used by FTSE for the security, as defined in these Ground Rules.
<i>f</i>	=	Free Float Factor	The factor to be applied to each security to allow amendments to its weighting, expressed as a number between 0 and 1, where 1 represents a 100% free float. The free float factor for each security is published by FTSE.
<i>d</i>	=	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.

CALCULATION FORMULAE**xd Adjustment**

$$\sum_{i=1}^n \frac{g_i \cdot w_i \cdot f_i}{d} / 100$$

Where:

- g_i = dividend per share of the i^{th} component security
 w_i = the weighting of i^{th} the component security (equal to the number of ordinary shares issued by the company)
 d = divisor
 f_i = free float factor for the i^{th} component security
 Ex adjustments are based on declared dividends.

Total Returns Calculation

$$R_t = \{R_y \cdot I_y / (I_y - XD)\} \cdot I_t / I_y = R_y \cdot I_t / (I_y - XD)$$

Where:

- R_y = Total Returns Index (TRI) value yesterday
 R_T = TRI value today
 I_y = Underlying capital index yesterday
 I_T = Underlying capital index today
 XD = xd adjustment to underlying capital index

P/E Ratio

$$\frac{\sum_{i=1}^n p_i \cdot s_i \cdot f_i}{\sum_{i=1}^n e_i \cdot f_i}$$

Where:

- n = The number of securities in the Index.
 s_i = share in issue for the i^{th} component security
 p_i = price of the i^{th} component security
 e_i = aggregate earnings of the i^{th} component security
 f_i = free float factor for the i^{th} component security

CALCULATION FORMULAE**Dividend Yield**

$$\sum_{i=1}^n \frac{g_i \cdot w_i \cdot f_i}{c} \cdot 100$$

Where:

- g_i = annualised dividend per share of the i^{th} component security
- w_i = the weighting of the i^{th} component security (equal to the number of ordinary shares issued by the company)
- c = total market capitalisation of the index constituents, adjusted for free float
- f = free float factor for the i^{th} component security

PRACTICES GOVERNING TREATMENT OF DIVIDENDS

The practices governing the treatment of the most common circumstances in determining the annual dividend of a share are set out below:

<u>CIRCUMSTANCE</u>	<u>RULE/ACTION</u>
<u>Interim increased</u> without any qualification by company	Assume unchanged final - add interim to previous final dividend for <u>new total</u>
<u>Interim increased</u> with the advice that an increased total is expected	Assume unchanged final - add interim to previous final for <u>new total</u>
<u>Interim reduced</u> with no advice about future dividend policy	Assume unchanged final - add interim to previous final for <u>new total</u>
<u>Interim passed</u> but company indicates that a final will be paid	Assume unchanged final - <u>new total</u> will be the previous final dividend <u>only</u>
<u>Interim passed</u> and company indicates that a final will not be paid	Assume that no dividend will be paid - new total will be zero
Interim paid in current year when <u>no interim</u> paid in previous year, with no statement regarding future dividends	Add interim to previous final dividend to give <u>new total</u>
<u>Interim increased/decreased</u> to <u>reduce disparity</u> between interim and final dividends	Assume unchanged total dividend - <u>do nothing</u>
<u>Interim passed</u> with no indication as to whether a final will be paid	Assume unchanged final - <u>new total</u> will be the previous final dividend <u>only</u>
<u>Interim unchanged</u> and company expresses doubt about ability to maintain previous year's total	Assume unchanged final - total dividend will remain unchanged
<u>Interim declared</u> when no dividends at all were paid in the previous year	Assume zero final - new total will comprise this interim <u>only</u>
Interim followed by <u>zero final</u> with no company indication about future dividends	Use last interim dividend for new total

PRACTICES GOVERNING TREATMENT OF DIVIDENDS

<u>CIRCUMSTANCE</u>	<u>RULE/ACTION</u>
<u>Interim increased</u> with the advice that the final will be increased by the same rate	Multiply last year's final by the same percentage increase as the interim and add to the interim for new total
<u>Special/extraordinary</u> dividend declared by company (i.e. a one-off bonus dividend)	Assume unchanged total - <u>exclude</u> this 'special' dividend from total
<u>Special/extraordinary</u> dividend declared for the third consecutive year	Add the dividend into the running total
Accounting period <u>not equal to twelve months</u>	Adjust dividend to 'per annum' basis
<u>Nil or partly-paid</u> security	Use same dividend as the fully-paid security and use fully-paid price to calculate yield
<u>Forecast</u> by company	Use company's forecast total
Zero forecast by company but it says that it hopes to resume payments	Use zero total
Maximum forecast by company	Use company's forecast total
Forecast cannot be related to existing shares because of merger	Use adjusted historical total - amount paid in company's last complete accounting period
<u>Increased/decreased first-quarter</u> dividend with no advice about future dividends	<u>Add to</u> previous year's second, third quarter and final dividend for new total
<u>Increased/decreased first-quarter</u> dividend where the company normally pays same first three quarterly dividends and then a final	Multiply the first-quarter dividend by three and add this to the previous final dividend for <u>new total</u>
Company announces an increased dividend for the first three quarters and forecasts an increased final amount	New total is the sum of the three quarterly dividends plus the forecast final
Enhanced scrip dividend	Assume unchanged total dividend per share - do nothing

**SUMMARY OF PROFIT AND LOSS ADJUSTMENTS
UNDER THE IIMR FORMULA**

The FTSE Actuaries UK Share Indices use the Headline Earnings formula for determining the treatment of earnings. The formula was devised by a sub-committee of the Institute of Investment Management and Research (IIMR) and was set out in Statement of Investment Practice No 1, September 1993. The IIMR formula is regularly reviewed by the IIMR.

The FT newspaper has chosen the formula proposed by IIMR because it represents the broadest available consensus on a "single number" treatment of earnings. It constitutes the considered response of the institutional investment community to the adoption by the Accounting Standards Board of Financial Reporting Standard 3 on corporate earnings (FRS3). UK companies have been required to report their results in line with FRS3 from 22 June 1993.

The aim of the IIMR headline earnings calculation is to be a measure of a company's trading performance for the reporting period. The key features are:

- (i) All trading profits and losses of the company for the year (including interest) should be included in the earnings number. Abnormal trading items are included but should be prominently displayed in a note to the earnings figure if they are significant.
- (ii) Profits and losses arising in operations discontinued at some point during the year, or in operations acquired at some point during the year, should remain in the earnings figure. The profits or losses on the sale or termination of a discontinued operation should be excluded.
- (iii) Profits and losses on the sale of fixed assets or of businesses, or on their permanent diminution in value or write-off, should be excluded. This does not apply to assets acquired for resale, such as marketable securities.

**SUMMARY OF PROFIT AND LOSS ADJUSTMENTS
UNDER THE IIMR FORMULA**

CATEGORISATION OF CERTAIN ITEMS

	<u>Headline Earnings - In or Out</u>
Profit or losses on the sale or termination of an operation	Out
Profits or losses on the disposal (including expropriation) of fixed assets	Out
Amortisation of goodwill	Out
Costs of reorganising or restructuring having a material effect on the nature and focus of the reporting entity's continuing operations	In
Costs of non-fundamental reorganisation	In
Abortive bid costs	In
Bid defence costs	Out
One-off costs of complying with major new legislation	In
Litigation costs (whether a hazard of normal business or abnormal)	In
Diminution in value of fixed assets	Out
Diminution in value of current assets	In
Profit or loss on capital reorganisation of long term debt	Out
One-off charge or credit relating to a pension fund deficiency or surplus	In
Profits or losses on disposal of trade investments	Out
Profits or losses on disposal of investments held for resale	In

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