Guide to Calculation Methods for the FTSE/JSE Africa Index Series

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1 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 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 South Africa and around the world should be represented on our practitioner committee. 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.

3 FTSE/JSE AFRICA INDEX SERIES

3.1 The FTSE/JSE Africa Index Series are arithmetic weighted indices where the weights are the free float 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 investibility weighting). The investability weighting is also called the free float factor. 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 that 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

Company	Share Price (R)	Shares-in-Issue (m)	Free Float Factor	Market Value (Rm)
A Limited	2.7	61,443	1.00	165,896.10
B Limited	6.05	22,579	1.00	136,602.95
C Limited	9.68	9,229	1.00	89,336.72
Total Market Value				391,835.77

Step 2 Set starting value of index (say, 100)

Step 3 Calculate index divisor on the starting date

$$\text{Index divisor} = \frac{\text{Total Market Value}}{\text{Index Value}}$$

$$= \frac{391{,}835.77}{100.0}$$

$$= 3918.36$$

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

Company	Share Price (R)	Shares-in-Issue (m)	Free Float Factor	Market Value (Rm)
A Limited	2.83	61,443	1.00	173,883.69
B Limited	5.88	22,579	1.00	132,764.52
C Limited	9.45	9,229	1.00	87,214.05
Total Market Value				393,862.26

Step 5 Calculate index value at end date

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

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

$$= 100.5$$

Index Value

- Start date = 100.0
- End date = 100.5

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:

Company	Shares-in-Issue (m)	Price Change (Rands)	Free Float Factor	Effect in Index Points
A Limited	61,443	0.13	1.00	2.04
B Limited	22,579	-0.17	1.00	-0.98
C Limited	9,229	-0.23	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 x 3918.36

= R2,037.55m

4 DIVIDENDS AND EARNINGS STATISTICS

A range of dividends and earnings statistics on the FTSE/JSE Africa Index Series are available daily within the index products.

4.1 Dividend Yield

4.1.1 For each Index, the dividend yield and the earnings yield also need to be calculated. The reason behind this is that investors focus more on dividend and earnings yields to determine the value of the company. Earnings growth gives investors the income growth and capital that they are looking for. It is increasing earnings that enable the company to pay increasing dividends and which contribute to growth in the share price.

4.1.2 Dividend yields are a widely used measure of the income return on a stock or index. The source of the dividend data is the CA Schedule (Corporate Action Schedule) from the JSE Securities Exchange South Africa. FTSE applies a free float adjustment to index dividend yields (please see Ground Rules for the Management of The FTSE/JSE Africa Index Series rule 4.3 for further information regarding free float).

4.1.3 The actual dividend declared by the company is used in the calculation of the Total Return Indices on the ex date. The annual dividend (sum of the actual dividends over the past 12 months) is used to calculate the dividend yield of the company. Dividends on the CA Schedule are always supplied in ZA Rands and cents. is announced in a currency other than Rand, the announced Rand equivalent is used, otherwise the WM Reuters closing rate on the day prior to the dividend going 'ex' is used to convert the dividend into Rand. Practices that 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/JSE Africa Index Series is based on the companies' own published data.

4.2.2 The JSE uses the published headline earnings (SA GAAP) to calculate a rolling 12 months (smoothed) earnings figure for the company. The figure is used to calculate the earnings yield of the company according to the formula:

4.2.3 Earnings Yield (EY): $= \frac{\text{Rolling 12 months earnings}}{\text{Price}} * 100$

4.2.4 The rolling 12 months earnings per constituent is then used to calculate the EY for the index.

The Formula used for calculating the dividend yield will be:

$$\text{Dividend Yield of the Index (DY)} = \frac{\text{Sum (Annual Dividend * Free-Float * No-of-Shares)}}{\text{Sum (Market Capitalisation)}}$$

Definitions:

Annual Dividend:	The total declared dividends for the past 12 months as calculated by FTSE.
Free-Float:	Banded free float factor
No-of-Shares:	Number of shares in the index, which may differ from the shares in issue as listed on the JSE
Sum (Market Capitalisation):	The accumulated free floated market capitalisation of all instruments belonging to the index.

The Formula used for calculating the earnings yield will be:

$$\text{Earnings Yield Index of the Index (EY)} = \frac{\text{Sum (Rolling-ptm-Earnings * Free-Float * No-of-Shares)}}{\text{Sum (Market Capitalisation)}}$$

Definitions:

Rolling-ptm-Earnings:	Rolling 12 month earnings (smoothed) as calculated by the JSE.
Free-Float:	Banded free float factor
No-of-Shares:	number of shares in the index, which may differ from the shares in issue as listed on the JSE
Sum (Market Capitalisation):	The accumulated free float market capitalisation of all instruments belonging to the index.

4.3 Actual Dividend Cover

4.3.1 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:

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

4.4 P/E Ratio

4.4.1 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, 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.

4.5 Scrip Dividends

4.5.1 No price adjustment is calculated for scrip dividends, but an ex dividend adjustment for the full cash amount is applied. The shares are added to the index when they are listed. Please note the share changes are subject to the Management of Shares in Issue rules.

4.5.2 The scrip dividend is declared in the CA Schedule with an event type SC. The JSE then lists the maximum possible number of shares (using event type SE). Once the result of the scrip dividend is known, the extra shares are withdrawn (event type WD). The shares in the index is only adjusted at this point in time if necessary.

5 TOTAL RETURNS

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 ex date expressed in index points. Xd adjustments are based on declared dividends. The xd adjustment is calculated as follows:

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

Where:

Market Value of Dividends = dividends in Rands * free float * No of Shares

5.1.2 If a company declares a dividend in a currency other than Rand, the published Rand equivalent will be used as obtained from the CA Schedule published by the JSE.

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

Company	Dividend (cents)	Shares (m)	Market Value (R m)	Free Float Factor	xd adjustment (points)
A Limited	0.1256	61,443	7,717.2	1.00	1.97
B Limited	0.1400	22,579	3,161.0	1.00	0.81
Total xd adjustment for Index					2.78

Index divisor = 3,918.36
at start of business

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 a secondary line is too small to be included in the indices, the xd adjustment is calculated using only the dividends paid on the main line and its share weighting.

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 ex date and the receipt of dividends (payment date), it is considered preferable to assume that all income is reinvested on the ex date rather than incur the complications of allowing a time lag before (i) reinvestment of the net dividends, and (ii) different and uncertain time lag before reinvestment of any tax reclaimed.

5.2.2 The TRIs are calculated daily. The calculation method will vary according to whether any dividends are declared ex on a given day. The following table and examples explain how the calculation is performed.

	Capital Index (CI)	xd Adjust (XD)	TRI
Day 1	3190	-	1000.00 *
Day 2	3200	-	1003.13
Day 3	3220	5	1010.98

* starting value

Where no xd adjustment occurs:

$$\text{TRI} = \text{Yesterday's TRI} \times \frac{\text{Today's CI}}{\text{Yesterday's CI}}$$

Day 2 TRI $= 1000.00 \times \frac{3200}{3190}$

$= 1003.13$

Where an xd adjustment occurs:

$$\text{TRI} = \text{Yesterday's TRI} \times \frac{\text{Today's CI}}{(\text{Yesterday's CI} - \text{XD})}$$

Day 3 TRI $= 1003.13 \times \frac{3220}{(3200 - 5)}$

$= 1010.98$

5.3 FREEFLOAT 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/JSE Africa Index Series. The free float adjustment which FTSE/JSE 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.

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.

5.3.3 The calculation of the investibility 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)

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

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

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

$$
\begin{aligned}
ff_t \leq 5\% \quad &; I_{Wt} = 0\%, \; B_t = 0\%, \; BW_t = 0\% \\
5\% < ff_t \leq 15\% \quad &; I^*_{W_t} = 0\%, \; B^*_t = 0\%, \; BW^*_t = 0\% \\
15\% < ff_t \leq 20\% \quad &; I_{Wt} = 20\%, \; B_t = 20\%, \; BW_t = 5\% \\
20\% < ff_t \leq 30\% \quad &; I_{Wt} = 30\%, \; B_t = 30\%, \; BW_t = 10\% \\
30\% < ff_t \leq 40\% \quad &; I_{Wt} = 40\%, \; B_t = 40\%, \; BW_t = 10\% \\
40\% < ff_t \leq 50\% \quad &; I_{Wt} = 50\%, \; B_t = 50\%, \; BW_t = 10\% \\
50\% < ff_t \leq 75\% \quad &; I_{Wt} = 75\%, \; B_t = 75\%, \; BW_t = 25\% \\
75\% < ff_t \quad &; I_{Wt} = 100\%, B_t = 100\%, BW_t = 25\%
\end{aligned}
$$

else

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

$$I^*_{w\,t+\delta t} = B^*_{t+\delta t} \in \mathbb{Z}_{\,[6\%,15\%]} \; ; \; BW^*_{t+\delta t} = 1\%$$

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

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

* please see Ground Rule 4.3 for the Management of the FTSE/JSE Africa Index Series.

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 4.3 of the FTSE/JSE Africa Index Series for details) will be applied on the effective date of the corporate event. Where possible, users will be notified via the standard Index Change Advice (ICA) issued by JSE and FTSE.

5.5.2 **Advance warning of sales of restricted equity:** if FTSE/JSE 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. This will be published on an ICA (Index Change Advice) and will be distributed via SENS and the FTSEJSE Web site.

5.5.3 **Retrospective sales of restricted equity:** if FTSE/JSE 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. This will be published on an ICA (Index Change Advice) and will be distributed via SENS and the FTSEJSE Web site.

5.5.4 **Price stabilisation (also known as Greenshoes):** those shares potentially to be offered as a greenshoe **(additional issue of shares after an IPO)** 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 investibility weighting adjusted, in accordance with rules 5.3 and 5.4, above. Provision for this kind of transaction is expected to be incorporated into the JSE's Listings' requirements during 2002, once the relevant legislation has been passed.

SECTION 6

6 CAPITALISATION ADJUSTMENTS

The market capitalisation of a company determines its weighting in the FTSE/JSE Africa Index Series. The market capitalisation is the product of the latest price multiplied by the current investible share weight.

6.1 Share Weighting

6.1.1 Only the eligible quoted equity capital of a constituent company will be included in the calculation of its market capitalisation. Where a company has two or more classes of equity, significant and liquid secondary lines will be included in the calculation of the market capitalisation of the company based on the market price of that secondary line. Unless the FTSE/JSE Africa Index Series Committee deems it inappropriate, a secondary line will be priced separately if its market capitalisation is greater than 25% of the market capitalisation of the company's main line and the secondary line is eligible, in its own right. Secondary lines which are less than 20% of the company's main line will be excluded. Should the market capitalisation of a secondary line which is already a constituent of the Index fall below 20% of the company's main line at the annual review, the secondary line will be deleted from the index. 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/JSE Africa Index Series and to prevent a large number of small weighting changes, changes to shares in issue are limited to cases where the impact is 10% or more, i.e. share changes are only considered on a cumulative basis from the number actually used in the index. For example, two or more changes, cumulatively below the threshold will be applied at the point when the total change exceeds 10%. The number of shares in issue for each constituent security is expressed to the nearest share. Notification of share weight changes will be provided through the FTSE/JSE Africa Tracker product.

6.2.2 The change itself will be applied after the index closes. This will be published on an ICA (Index Change Advice) and will be distributed via SENS and the FTSE/JSE Website with the relevant notice period.

6.2.3 Share changes following corporate events such as company mergers, de-mergers etc will be dealt with in the normal manner i.e. effective in the index on the effective day of the action. Notifications of corporate event-driven changes are provided through the issue of an Index Change Advice (ICA) and through the Tracker end of day product.

6.2.4 The shares in issue will be reviewed at the quarterly index review. The shares in the index will be adjusted to the number of shares listed on the JSE where the difference is more than 1%.

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.

Type of Corporate Action	Adjustment	Adjustment to Divisor
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

6.3.2 The adjustment to a company's share weighting as a result of a share repurchase (commonly known as a 'buy-back') will only be effected when the share total of the company is changed by more than 10% on a cumulative basis.

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

Company	Share Price (Rand)	Shares-in-Issue (m)	Free Float Factor	Market Value (R m)
A Limited	2.83	61,443	1.00	173,883.69
B Limited	5.88	22,579	1.00	132,764.52
C Limited	9.45	9,229	1.00	87,214.05
Total Market Value				393,862.26

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

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

Step 2 Remove C Limited **and insert D** Limited

Company	Share Price (Rand)	Shares-in-Issue (m)	Free Float Factor	Market Value (R m)
A Limited	2.83	61,443	1.00	173,883.69
B Limited	5.88	22,579	1.00	132,764.52
D Limited	20.26	3,649	1.00	73,928.74
				380,576.95

Step 3 Calculate New Divisor

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

$$\text{New Divisor} = \frac{380,576.95}{100.5}$$

$$= 3,786.84$$

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 R420 offers shareholders one new share for every five held at a discount price of R390). Further assume that the rights are underwritten. 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:

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

Using the above example:

$$\frac{(5 \times 420) + 390}{5 + 1} = R415$$

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)

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

Using the previous example:

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

NOTE The old capitalisation of the company would be R 2,100m (500m x R 4.20) and the new capitalisation would be R 2,490m (600m x R 4.15). R 390m has therefore been raised through the rights issue

Step 3 Calculate new divisor

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

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

Using previous examples:

$$\text{New Divisor} = \frac{380{,}576.95 + 390}{100.5}$$

$$= 3790.72$$

6.5.3 If the offer price of the rights issue is greater than the underlying market price, the indices are normally not adjusted (as there is no dilution). If the rights are underwritten as well, the underwriter is likely to hold a significant stake after the issue, in which case the free float will also have to be adjusted. It thus seems prudent in these circumstances to wait until the take-up is known, and then adjust both shares and free float simultaneously if necessary.

7 REVIEW PROCESS

7.1 It has been a practice of the FTSE/JSE Africa Index Series Committee 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 first Friday of December for those indices reviewed annually; and the first Friday of March, June, September and December for those reviewed quarterly.

7.3 With reference to liquidity rule 4.4.3 of the Ground Rules, 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 first Friday of March, June, September and December.

7.4 The source for liquidity data is Transaction Reports, prepared and supplied by the JSE Securities Exchange Indices department.

7.5 When considering the eligibility of a company that has been involved in a merger during the period in which liquidity is considered for a review, only the figures of the most liquid of the unmerged entities will be used for the period before the merger became effective. Companies resulting from a spin-off or demerger will be treated as new.

7.6 Reserve List stocks: in the event that only 3 Reserve List stocks remain available for the FTSE/JSE Top 40 Index and only 6 remain available for the FTSE/JSE Mid Cap Index, FTSE/JSE will publish on the FTSE/JSE web sites and in SENS an additional 2 and 4 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 Please see the FTSE/JSE Ground Rules Section 5 for more information on the review methodology.

SECTION 8.0

8 FURTHER INFORMATION

Further information on the FTSE/JSE Africa Index Series is available from FTSE and the JSE, who will also welcome comments on these Ground Rules and on the Index Series.

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APPENDIX A

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

$$\sum_{1}^{n} \frac{((p_i \bullet e_i) \bullet s_i \bullet f_i)}{d}$$

n = 1,2,3.....,n

n	=		The number of securities in the Index.
p	=	Price	The latest trade price of the component security (or the price at the close of the Index on the previous day)
e	=	Exchange Rate	The exchange rate required to convert the security's home currency into the index's base currency. All the JSE shares are traded in Rands, and the exchange rate thus remains at a factor of 1.
s	=	Shares in Issue	The number of shares in issue used by FTSE/JSE for the security, as defined in these Ground Rules.
f	=	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/JSE.
d	=	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

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

Where:

g_i = dividend per share of the i[th] component security
s_i = number of ordinary shares issued by the company (as defined in the Ground Rules)
d = divisor
f_i = free float factor for the i[th] component security

Ex adjustments are based on declared dividends.

Total Returns Calculation

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

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

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

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

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

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

APPENDIX B

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:

CIRCUMSTANCE	RULE/ACTION
Interim increased without any qualification by company	Assume unchanged final - add interim to previous final dividend for new total
Interim increased with the advice that an increased total is expected	Assume unchanged final - add interim to previous final for new total
Interim reduced with no advice about future dividend policy	Assume unchanged final - add interim to previous final for new total
Interim passed but company indicates that a final will be paid	Assume unchanged final - new total will be the previous final dividend only
Interim passed 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 no interim paid in previous year, with no statement regarding future dividends	Add interim to previous final dividend to give new total
Interim increased/decreased to reduce disparity between interim and final dividends	Assume unchanged total dividend - do nothing
Interim passed with no indication as to whether a final will be paid	Assume unchanged final - new total will be the previous final dividend only
Interim unchanged and company expresses doubt about ability to maintain previous year's total	Assume unchanged final - total dividend will remain unchanged
Interim declared when no dividends at all were paid in the previous year	Assume zero final - new total will comprise this interim only
Interim followed by zero final with no company indication about future dividends	Use last interim dividend for new total

APPENDIX B

PRACTICES GOVERNING TREATMENT OF DIVIDENDS

CIRCUMSTANCE	RULE/ACTION
Interim increased 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
Special/extraordinary dividend declared by company (i.e. a one-off bonus dividend)	Assume unchanged total - exclude this 'special' dividend from total. This is shown in the CA Schedule as event type IS, and treated as a capital reduction.
Accounting period not equal to twelve months	Adjust dividend to 'per annum' basis
Nil or partly-paid security	Use same dividend as the fully-paid security and use fully-paid price to calculate yield
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
Increased/decreased first-quarter dividend with no advice about future dividends	Add to previous year's second, third quarter and final dividend for new total
Increased/decreased first-quarter 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 new total
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

APPENDIX B

PRACTICES GOVERNING TREATMENT OF DIVIDENDS

CIRCUMSTANCE	RULE/ACTION
Enhanced scrip dividend	Assume unchanged total dividend per share - do nothing