

Wilshire

FT Wilshire



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1 Index Calculation Algorithm

1.1 Index Formula

The indexes are calculated using a Laspeyres formula. This formula is used for the calculation of the price and total return indexes. The only difference is the divisor D_t for the two indexes.

The indexes are computed as follows:

$$Index_t = \frac{\sum_{i=1}^n (p_{it} \times q_{it})}{C_t \times \sum_{i=1}^n (p_{i0} \times q_{i0})} \times Base\ Index\ Value = \frac{M_t}{B_t} \times Base\ Index\ Value$$

The above formula can be simplified as $Index_t = \frac{M_t}{D_t}$

where:

- $D_t = \frac{B_t}{Base\ Index\ Value}$ = divisor at time t
- n is the number of stocks in the index
- p_{i0} is the closing price of stock i at the base date
- q_{i0} is the number of shares of stock i at the base date
- p_{it} is the closing price of stock i at time t
- q_{it} is the number of shares of stock i at time t
- C_t is the adjustment factor for the base date market capitalization at time t
- M_t is the market capitalization of the index at time t
- B_t is the adjusted base date market capitalization of the index at time t

1.2 Divisor Adjustments

Corporate actions affect the share capital of constituent stocks and therefore could trigger index increases or decreases. To avoid distortion, the index divisors are adjusted accordingly. Changes in index market capitalization due to changes in the composition (additions, deletions or replacements), weighting (due to changes in shares or float factors) or corporate actions (mergers, spinoffs, rights offerings, repurchase of shares, public offerings, return of capital, or special cash or stock distributions of other stocks) result in a divisor change to maintain index continuity before and after the event.

1.2.1. Formula for divisor adjustments

The following formula will be used for divisor adjustments.

Note: No divisor adjustments are necessary for stock splits, since market capitalization does not change the share number and share price are adjusted prior to the opening of trading on the split's ex-date.

$$D_{t+1} = D_t \times \frac{\sum (p_{it} \times q_{it}) + \Delta MC_{t+1}}{\sum (p_{it} \times q_{it})}$$

where:

- D_t is the divisor at time t
- D_{t+1} is the divisor at time $t + 1$
- p_{it} is the closing price of stock i at time t
- q_{it} is the number of shares of stock i at time t

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- ΔMC_{t+1} is the net change of index market capitalization from adding new components' adjusted market capitalization (calculated with adjusted closing prices and shares effective at time $t + 1$) and deducting market capitalization of companies to be deleted (calculated with closing prices and shares at time t)

2 Calculation of Free Float

Unless otherwise stated in their methodology documentation, FT Wilshire indexes are weighted according to free-float capitalization. The following four types of block ownership are considered when calculating float adjustments:

- Cross ownership—shares that are owned by other companies, including banks and life insurance companies not acting in a fiduciary capacity
- Government ownership—shares that are owned by governments (central or municipal) or their agencies
- Private ownership—shares that are owned by individuals, families or charitable trusts and foundations.

A company's outstanding shares are not adjusted by institutional investors' passive holdings, which include, but are not limited to, the following categories:

- Custodian nominees
- Trustee companies
- Mutual funds (open-end and closed-end funds)
- Investment companies.

Positions held by institutional investors represented on a company's board of directors or by institutions attempting to control a company will be blocked.

3 Adjustment for Corporate Actions

Index divisors may decrease, increase or remain constant when corporate actions occur for a constituent stock. Assuming shareholders receive "B" new shares for every "A" Shares held for the following corporate actions:

Action Type	Adjustment	Divisor Change
Cash Dividend	adjusted price = closing price – dividend announced by the company Note: applied for total return index only	Decrease
Special Cash Dividend	adjusted price = closing price – dividend announced by the company Note: applied for price and total return indexes	Decrease
Split and Reverse Split	adjusted price = closing price * A / B new number of shares = old number of shares * B / A	Constant
Rights Offering	adjusted price = (closing price * A + subscription price * B) / (A + B) new number of shares = old number of shares * (A + B) / A	Increase
Stock Dividend	adjusted price = closing price * A / (A + B) new number of shares = old number of shares * (A + B) / A	Constant
Stock Dividend of a Different Company Security	adjusted price = (closing price * A – price of the different company security * B) / A	Decrease

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Spinoffs	adjusted price = (closing price * A – price of spun-off shares * B) / A Note: spun-off company is added to the present company index until the next review	Decrease
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If an index constituent splits or spins off a portion of its business to form one or more new companies, all the companies involved in the spinoff will be immediately included in the index of the parent company, as long as they qualify for membership in their own right. All companies involved in the event will be classified in the same country size segment index as the pre-spinoff parent until the next index quarterly review.

4 Suspended Securities

A security that has been suspended from trading, either by the trading venue or as a result of regulatory action, will be held in the index at its last traded price. Should the suspension persist during the period of an index quarterly rebalance or semi-annual reconstitution, no changes will be made to the constituent's shares outstanding or free float as part of the rebalance or reconstitution.

The status of the suspended security will be reviewed after 20 trading-days and again after 40 trading-days. If after a status review, the Wilshire Indexed Index Management Committee determines that the security is unlikely to recommence trading within the next three months, Wilshire Indexes will provide a minimum of 20 trading-days' notice to the effect that the security will be deleted from Wilshire indexes at the index quarterly rebalance or index semi-annual reconstitution immediately following the expiry of the minimum 20 trading-day notice period.

If after 60 trading-days, the security has still not recommenced trading, Wilshire Indexes will provide a minimum of 20 trading-days' notice to the effect that the security will be deleted from Wilshire indexes at the index quarterly rebalance or index semi-annual reconstitution immediately following the expiry of the minimum 20 trading-day notice period.

Should the security recommence trading following the publication of the deletion notice but at least 10 trading days ahead of the announced deletion date, the deletion notice will be rescinded.

If the security recommences trading following the publication of the deletion notice but within 10 trading days of the announced deletion date, the security will still be deleted. The deletion will take place at the traded price.

If the security has not recommenced trading on the effective date of the rebalance/reconstitution, the security will be removed at a price of zero unless the Wilshire Indexes Index Management Committee determines that an acceptable alternative tradable price exists, for example on the grey market, or if a price can be deduced from a comparable security that has not been suspended, for example in the case of A and H share listings of Chinese securities.

A security that has been deleted as a result of these rules that subsequently recommences trading will be treated as a new security at subsequent index reconstitutions.

5 Unexpected Market Closures

5.1 FT Wilshire 5000 Index Series

If an eligible US market (NYSE, Nasdaq or CBOE), or a segment of a US market, closes unexpectedly the securities that trade on that market will be held in the index at their last traded price.

If one or both of the Nasdaq or NYSE markets is closed in the 10 trading-days before the effective date of a forthcoming index quarterly rebalance or semi-annual reconstitution of the FT Wilshire 5000 Index Series, and no indication has been provided as to whether the market is likely to re-open ahead of the rebalance or reconstitution, the entire index rebalance or reconstitution may be deferred until the affected market reopens.

If any of the NYSE, Nasdaq or CBOE exchanges is closed unexpectedly on the day of an index rebalance or reconstitution, the rebalance or reconstitution will proceed as scheduled. Wilshire Indexes will consult with users and other stakeholders on whether any remedial action is required subsequent to the rebalance or reconstitution so that the indexes best represent the experiences of those seeking to match the index.

5.2 FT Wilshire Global Equity Market Series

If a market closes unexpectedly, for example because of a force majeure incident, the constituents that take their prices solely from that market (i.e. they do not trade on any other venue), will be held in the index at their last traded price.

Should the market closure be in effect 10 trading-days before the effective date of a forthcoming index quarterly rebalance or semi-annual reconstitution of the FT Wilshire Global Equity Market Index Series, and no indication has been provided as to whether the market is likely to re-open ahead of the rebalance or reconstitution, Wilshire Indexes will determine whether the rebalance or reconstitution of the FT Global Equity Market Series should proceed as planned (with changes to affected constituents suspended) or if the entire rebalance or reconstitution should be deferred to a later date. The decision will take account of the percentage of the index's capitalization affected by the market closure. Should the affected capitalization exceed 10% of the total capitalization of the FT Wilshire Global All-Cap index, the decision will ordinarily be to defer the entire rebalance or reconstitution; if less than 10% of the total capitalization, the rebalance/reconstitution will generally proceed as planned but with all changes to the affected market constituents deferred to after the market has reopened.

If a market is closed unexpectedly on the day of an index rebalance or reconstitution, the rebalance or reconstitution will proceed as scheduled. Wilshire Indexes will consult with users and other stakeholders on whether any remedial action is required subsequent to the rebalance or reconstitution so that the indexes best represent the experiences of those seeking to match the index.

Protracted, longer term closures of markets are extremely rare but have happened in the past. For example, the Egyptian Stock Exchange closed for a period of two months in early 2011 as a result of the Egyptian revolution. In such circumstances, Wilshire Indexes will generally look to follow analogous procedures as those set out above for suspended securities.

The status of the closed market will be reviewed after 20 trading-days and again after 40 trading-days. If after a status review, the Wilshire Indexed Index Management Committee determines that the market is unlikely to re-open within the next three months, Wilshire Indexes will provide a minimum of 20 trading-days' notice to the effect that the affected securities will be deleted from Wilshire indexes at the index quarterly rebalance or index semi-annual reconstitution immediately following the expiry of the minimum 20 trading-day notice period.

If after 60 trading-days, the market has not re-opened, Wilshire Indexes will provide a minimum of 20 trading-days' notice to the effect that the securities trading on that market will be deleted from Wilshire indexes at the index quarterly rebalance or index semi-annual reconstitution immediately following the expiry of the minimum 20 trading-day notice period.

Should the market re-open following the publication of the deletion notice but at least 10 trading days ahead of the announced deletion date, the deletion notice will be rescinded.

If the market re-opens following the publication of the deletion notice but within 10 trading days of the announced deletion date, the securities trading on that market will still be deleted. The deletions will take place at the traded price.

If the market has not re-opened on the effective date of the rebalance/reconstitution, the securities that trade on the market will be removed at a price of zero.

A security that has been deleted as a result of these rules that subsequently recommences trading, for example because the market re-opens, will be treated as a new security at subsequent index reconstitutions.

Should a market remain closed for a period exceeding three months, its classification within the Global Equity Market Series will be reviewed. The review may result in the market becoming ineligible for inclusion in the Global Equity Market Series.

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