

Total Return Index Methodology

JAN 2025

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Introduction

Index Objective and Highlights

The BKC Total Return Index measures the performance of the equities listed on the Rwandan Stock Exchange as their primary exchange, assuming all dividends are reinvested into the index.

The BKC Total Return Index's movement is made up of two components:

1. **Price Return.** Which reflects the movement in stocks prices.
2. **Dividend Return.** Reflecting the payment of dividends by the constituent stocks before reinvestment into the index.

The reinvestment of dividends is carried out on the ex-div date instead of the payment date to provide an accurate straight forward method to reflect the impact the dividend has on a stock's share price.

The purpose of the BKC Total Return Index is to provide a benchmark for long-term investors and institutional investors managing mutual funds and pension schemes, that regularly reinvest dividends to optimize returns. Index values prior to the BKC Total Return Index's launch date are back tested, using historical data to reflect the application of the index's methodology during the period prior to the index's launch date.

As of January 2025, The BKC Total Return Index consists of the same constituent stocks as the Rwandan Stock Index (RSI), the five constituents are as follows:

- Bank of Kigali (Ticker: BOK)
- Bralirwa (Ticker: BLR)
- I&M Bank Rwanda (Ticker: IMR)
- Cimerwa (Ticker: CMR)
- MTN Rwandacell (Ticker: MTNR)

Formerly:

- Crystal Telecom (Ticker: CTL)

Key Features

The core difference between a price return index and a total return index is the treatment of income generated by the constituent securities. The reinvestment of dividends results in a compounding effect on dividends, generating a higher return overtime than a price return index.

Indices are normalized to a base value at the beginning, typically a multiple of 10 or 100, to allow for easier tracking of their performance.

Total Return Indices can provide insights into the risk-adjusted returns of a particular asset or market, particularly in comparison to price return indices.

The BKC Total Return Index accounts for only local securities. This is done to avoid complications that may be caused by currency fluctuations caused by shifts in currency exchange rates, reducing the chances of error in calculating the index.

Assumptions

- The index assumes that all dividends are perfectly reinvested at the ex-dividend date, without delay or loss, at the prevailing market price.
- The index assumes that no taxes (e.g., capital gains tax, withholding tax) are applied to the income or capital gains generated from the securities in the index. This is done due to the variation in tax brackets regarding local, East African and foreign investors.
- The index assumes that any necessary price adjustments due to corporate actions (e.g., stock splits, mergers, or spin-offs) are accurately and promptly reflected in the index calculation to maintain its accuracy.

Index Overview

Eligible Assets

The BKC Total Return Index only consists of the Rwandan equities included in the Rwanda Share Index. Only equities primarily listed on the Rwandan Stock Exchange (RSE) are eligible to be included on the Rwanda Share Index (RSI); equities that are cross listed, primarily listed on other exchanges are not included in the BKC Total Return Index.

Index Base Date and Index Base Value

The base date for the BKC Total Return Index is Jan 2, 2012, the same date as the Rwandan Share Index. The BKC Total Return Index base value is 100, the same initial base value as the Rwandan Share Index.

Calculation Methodology

The Total Return Index is made of two components, the *price return* of the index and the *dividend return* of the index.

Price Return Index

Price Indices measure the daily market performance of a basket of securities. It calculated the weighted market capitalization return of all the constituent securities within the index.

The first step is calculating the market capitalization of the index, this is done by multiplying the price of the security by the number of shares included in the index.

$$\text{Market Capitalization}_{(\text{Security } i)} = (\text{Price}_{(\text{Security } i)} * \text{Number of Shares}_{(\text{Security } i)})$$

The summation of all the individual security market capitalizations results in the price index market capitalization. The equation for calculating the index market capitalization is:

$$\text{Index Market Cap}_{(0)} = \text{Market Cap}_{(\text{Security } i)} + \dots + \text{Market Cap}_{(\text{Security } n)}$$

The index is then normalized by dividing the index market capitalization by a divisor to provide an *initial index level*. The starting index level is often a multiple of 10, such as 100 or 1000. The equation for the *initial index level* (denoted as *Price Return Index Level*₍₀₎) is:

$$\text{Price Return Index Level}_{(0)} = \frac{\text{Index Market Cap}_{(0)}}{\text{Divisor}}$$

The index level for the next day is calculated by taking the base index level and multiplying it by the change in the index market cap, the index level for the first day after the initial index would be:

$$\text{Price Return Index Level}_{(t)} = \text{Price Return Index Level}_{(0)} * \frac{\text{Index Market Cap}_{(t)}}{\text{Index Market Cap}_{(0)}}$$

Where (t) denoted the current day or period you want to calculate the index and (0) denotes the initial or base values.

The equation for subsequent days would be calculated using the following equation:

$$\text{Price Index Level}_{(t)} = \text{Index Level}_{(t-1)} * \frac{\text{Index Market Cap}_{(t)}}{\text{Index Market Cap}_{(t-1)}}$$

This equation forms the price component of the index's return.

Daily Dividend Return

The next component of the *Total Return Index* is the daily dividend return component which is calculate by first calculating the *Index Daily Dividend*. The Daily Index Dividend is calculated by multiply the previous index level to the Index Dividend Yield, the equation for the Daily Index Dividend is:

$$\text{Daily Index Dividend}_{(t)} = \text{Total Return Index Level}_{(t-1)} * \text{Index Dividend Yield}$$

Where Index Dividend Yield is calculated by dividing the sum of dividend paid out that day by the index market cap on that same day.

$$\text{Index Dividend Yield} = \frac{\text{Total Daily Dividend}_{(t)}}{\text{Index Market Cap}_{(t)}}$$

and Total Daily Dividend is the sum of the dividend paid out by each constituent that day multiplied to their respective constituents' shares included in the index:

$$\text{Total Daily Dividend}_{(t)} = \sum (\text{Dividend}_{(\text{security } i)} * \text{Number of Shares}_{(\text{security } i)})$$

Total Index Return

Prior to calculating the Total Index Return, the base or *initial total return index level* denoted as (*Total Return Index Level*₍₀₎) must be defined. The initial total return index level must be same value as the price return index level:

$$\text{Total Return Index Level}_{(0)} = \text{Price Index Level}_{(0)}$$

For subsequent total return index level, use the equation for both the Price Return and Daily Return. This is done using the following equation:

$$\text{Total Return Index Level}_{(t)} = \text{Total Return Index Level}_{(t-1)} * \frac{\text{Price Index Level}_{(t)} + \text{Daily Index Dividend}_{(t)}}{\text{Price Index Level}_{(t-1)}}$$

Index Maintenance

The market capitalization on constituent stocks should only be influenced by price movement of the respective stocks. Corporate actions, such as stock splits, mergers, acquisitions, dividends, and spin-offs, can significantly affect the composition and performance of an index. To ensure the index accurately reflects the underlying market or asset class, these actions must be carefully adjusted.

Index maintenance regarding corporate actions resulting in a change of the number shares outstanding will require a divisor change to rebalance the index. This carried out using the following method:

$$(New\ Divisor_t) = (Divisor_{t-1}) * \frac{(Index\ Market\ Cap_t)}{(Index\ Market\ Cap_{t-1})}$$

Where, $(Divisor_{t-1})$ is the divisor on the day before the corporate action, and $(Index\ Market\ Cap_t)$ is the index market cap on the day of the corporate action.

The same rebalancing process will take place to account for other significant changes in the index weighting such as the listing or new stocks or the delisting of current stocks.

The index is calculated on a daily basis, ensuring that its value is updated to reflect the most current market conditions and the performance of its constituents. This daily calculation allows for timely tracking of the index's movements and facilitates up-to-date benchmarking.

At the end of each month, a factsheet will be released on our [website](#), providing a detailed summary of the index's performance over the month. The factsheet will include key metrics such as total return, price return, sector weights, and other relevant information, offering investors and stakeholders valuable insights into the index's performance and underlying trends.

Index Governance

"The BK Capital Index Committee, **comprising senior investment analysts, Head of Investment Banking, and Managing Director**, is responsible for managing the index. The committee meets regularly. At each meeting, the Index Committee reviews any significant market events. In addition, the Index Committee may revise index policy for timing of resets or other matters.

Given the potential market impact of index changes, all committee discussions are confidential. The Committee members shall avoid any conflicts of interest that may impact their decision-making.

BK Capital's Index Committees reserve the right to make exceptions and deviate from the established index methodology if the need arises. In any scenario where the treatment differs from the general rules stated in this document or supplemental documents, clients will receive sufficient notice, whenever possible.

In addition to the daily governance of indices and maintenance of index methodologies, at least once within any 12-month period, the Index Committee reviews the methodology to ensure the indices continue to achieve the stated objectives, and that the data and methodology remain effective. In certain instances, BK Capital may publish a consultation inviting comments from external parties such as the Rwanda Stock Exchange."

Data Sources

All data used in the index calculation is sourced from the Rwanda Stock Exchange, the constituents' financial statements and AGM resolutions and results.

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