Credit Indices Guide

December 2007

Standard Bank

BOND EXCHANGE OF SOUTH AFRICA

Building better markets

Introduction

This booklet introduces to investors and asset managers a set of new and improved indices against which to compare the performance of individual credit instruments that are neither issued by, nor guaranteed by, central government. Most of the instruments constituting the indices are issued by private sector organisations.

The design and composition of the indices, each covering a particular class of credit instrument, is the result of collaboration between Standard Bank and the Bond Exchange of South Africa Limited (BESA). That collaboration was undertaken to improve and enhance Standard Bank's existing corporate bond index. Prior to the design of the new indices, the needs of investors were fully researched.

Please read carefully the important disclaimer at the end of this publication

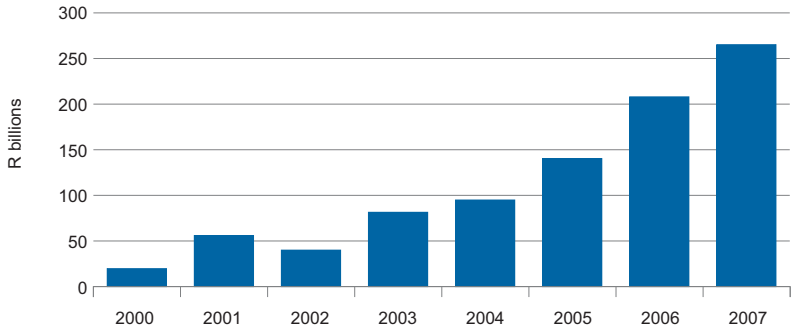
The Development of the South African Credit Market

South Africa's first corporate bond was issued by South African Breweries in 1992. The number and the total value of corporate bonds listed on BESA did not, however, begin to achieve significant levels until 2000. Thereafter, those totals rose exponentially, comprising a steadily growing proportion of the total outstanding debt listed on BESA. By the end of December 2007 there were 809 outstanding corporate debt issues worth a total of R265 billion nominal, which represented 34 percent of the total outstanding listed debt.

There are several reasons for that growth. Among them are steadily declining interest rates; the growing range of debt instrument types and structures; redemption dates that provide corporate treasurers with valuable flexibility in both raising and investing funds, and the tax-deductibility of interest payments on debt issuers' borrowings.

Another factor encouraging the growth of credit issues are BESA's low issue costs and its flexibility. These two factors are a reflection of BESA's commitment to the South African debt instrument market.

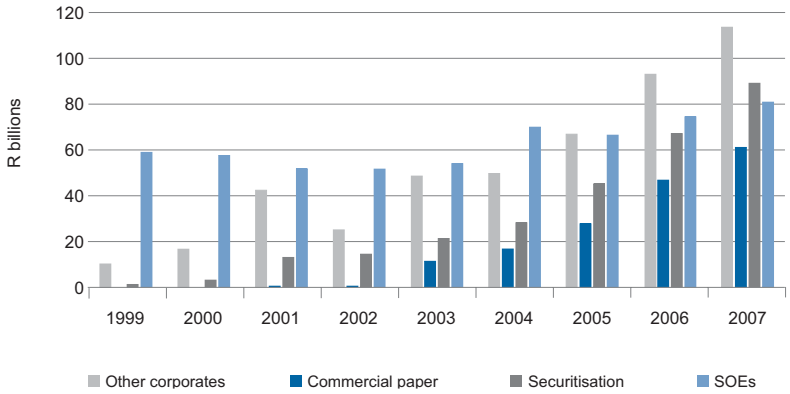
Growth in Nominal Outstanding of Corporate Debt



Corporate participation in the domestic bond market has historically been dominated by the major banks, acting as conduits for securitisation and commercial paper, and by state-owned enterprises (SOEs) such as Eskom and Telkom.

Banks' dominance of the private-sector corporate listings sector is, however, slowly being reduced as an increasing number of issuers appear from other economic sectors: manufacturing, telecommunication services, transport and insurance, to name a few. Rules were designed for constructing the Standard Bank BESA Credit Indices that provide for the inclusion of all securities not guaranteed by the government, regardless of whether they are issued by state-owned or private-sector enterprises.

Debt Outstanding by Issuer Class

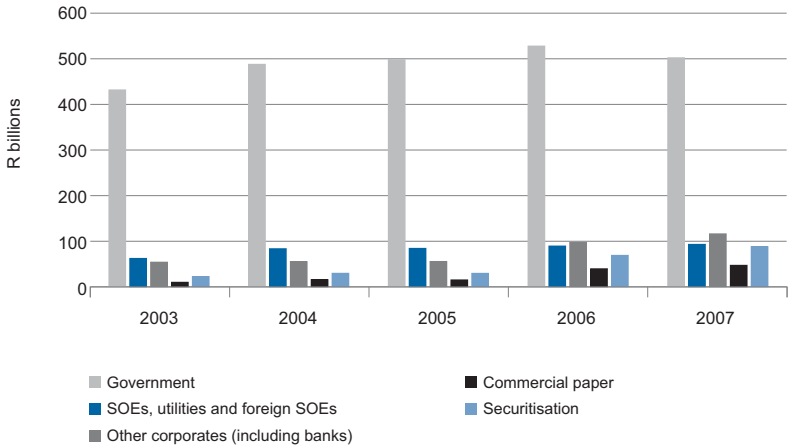


Nominal Outstanding per issuer class

Nominal Outstanding per Issuer – 2006

Nominal Outstanding per Issuer – 2007

Market Capitalisation



Objectives of the Indices

Continued growth of credit issuance in the South African bond market has generated a clear investor need for a reliable and independent measure of the performance of a market sampling that encompasses most of the credit sector. The Standard Bank BESA Credit Indices have been designed to achieve that.

The objectives of the indices are to provide:

- A comprehensive benchmark tool for the credit market in South Africa in terms of performance measurement, market analysis and portfolio construction.
- Clear and transparent rules.
- A balance between completeness and investability.
- An extension of, and a complement to, existing BESA indices.

Constituents Selection and Methodology

Because of differences in the pricing methodologies applicable to floating rate and fixed securities, we have split the indices rather than combine them into one credit index. The result is three new indices that cover the credit bond universe listed on BESA – Credit Fixed, Credit Floating and Credit Composite. The Credit Composite Index is a weighted average index of the Credit Fixed and Credit Floating Indices. The trio of indices enables investors to choose the benchmark most appropriate for their credit portfolios.

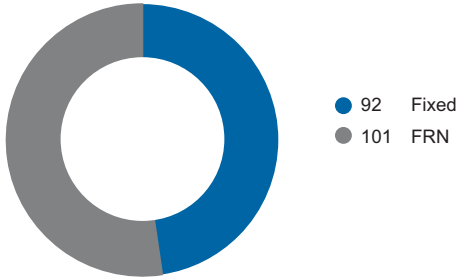
In addition to the above indices, term split sub-indices will be generated for all of the Credit Indices.

Bond Inclusion Criteria

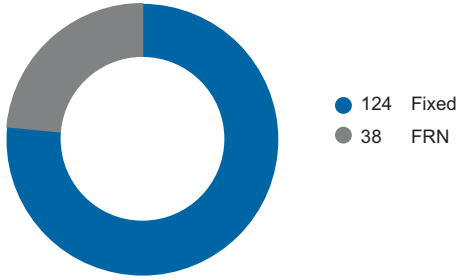
The eligibility criteria will vary based on the index for which the instrument qualifies. Although inclusion criteria are similar for both the Credit Fixed and the Credit Floating, a slight variation is present due to the differences in pricing of fixed and floating rate securities.

Issuer Type	The issuer must be a corporate entity, or a municipality, or a public entity, provided that issues issued by such entities are not government guaranteed.
Settlement and Listing Status	The issue must be listed on BESA and settled electronically.
Security Pricing Class	The issue must be fixed or a floating rate bond issue.
Fixed Rate Bond	An issue is a fixed rate bond, if: – it has a fixed coupon (even zero) and pays semi-annually, until the pricing redemption date – it has a single redemption date; or – it has multiple redemption dates, but is market priced according to the "mid-redemption convention" – the redemption/maturity date coincides with the last coupon date.
Floating Rate Bond	An issue is a floating rate bond or note (FRN), if: – it has a floating rate coupon and pays quarterly, until the pricing redemption date – it has a single redemption date; or – it has multiple redemption dates, but is market priced according to the "mid-redemption convention" – the redemption/maturity date coincides with the last coupon date; and – the issue is non-amortising.
Term to Maturity	The issue must have a remaining term to redemption/maturity greater than one year over the entire averaging period.
Options	Issues with call options, as well as with options to extend maturity are eligible for selection.
Credit Rating	Securities are eligible for index selection, irrespective of credit rating.
Clean Market Capitalisation	Clean market capitalisation is the product of the nominal amount in issue and clean price, divided by 100 (prices are computed per R100 nominal). The nominal in issue and the clean price to be used in the market capitalisation calculation are as at month-end.
Minimum Clean Market Capitalisation	Clean market capitalisation must average at least R100 million over the averaging period.
Credit Fixed	Constitutes the fixed rate bonds eligible for selection.
Credit Floating	Constitutes the floating rate bonds eligible for selection.

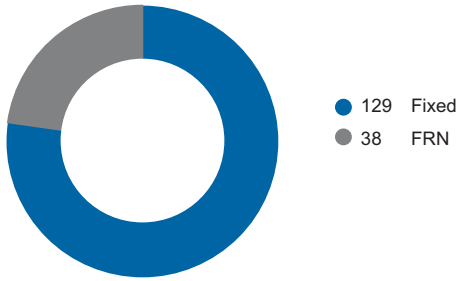
Total Number of Credit Issues
– December 2007



Credit Issues Total Nominal Outstanding
– December 2007 (R billion)



Credit Issues Total Clean Market Capitalisation
– December 2007 (R billion)



Index Characteristics

Base Date	7 November 2005
Base Price	100
Re-Weighting Frequency	Quarterly (February, May, August and November)
Averaging Period	Twelve months preceding the month of the re-selection by one month, for example, in the case of the February 2006 selection, the averaging period was January 2005 to December 2005.
Term Split Sub-Indices	1-3 years; 3-7 years; 7-12 years; 12+ years
Pricing	The indices use the daily BESA mark-to-market prices, generated at the close of the market on each business day.
Publishing Frequency	The indices are calculated and published daily following the close of the market.
Index Coverage	The indices cover a complete universe of floating rate and fixed securities, subject to the eligibility criteria listed above.

Index Weighting

Constituents will be assigned weightings based on the nominal amounts in issue as recorded on the last day of the averaging period. The weights will be expressed in millions of Rands.

The Credit Composite Index is a weighted average of the Credit Fixed Index and the Credit Floating Index.

Weights remain unchanged for an entire quarter.

Extraordinary Events

Reselection of constituent instruments takes place quarterly. Under certain circumstances it might be necessary to consider the re-selection of constituents during this period. These circumstances include (but are not limited to):

- The early redemption or repurchase by the issuer of a large proportion of an instrument's outstanding issue
- The issue of a new instrument which is too large or important to have to wait for the next quarterly re-selection
- The unbundling of an instrument e.g. the issuer offers an optional conversion into three new instruments.

If any of the above events occur, the index committee[1] will convene and decide on an appropriate course of action. Decisions to be taken are:

- The new constituents of the sectors
- Their new weightings
- The effective date of the change
- The amount of notice required.

All decisions will be communicated through BESA Bulletins. BESA Bulletins will be available on the BESA website following initial distribution.

Market Prices

The constituents will be priced according to BESA's daily mark-to-market valuations.

[1] *Index Committee – A group of market professionals responsible for overseeing maintenance of the Credit Indices' functionalities, rules and re-constitutions.*

Term Sub-sectors

Term sub-sectors will be created for all the Credit Indices. A bond will be assigned to a particular term sub-sector if its time to maturity falls below, or equals the lower limit of the sector maturity interval.

Credit Composite term sub-sectors will be generated as weighted averages of the respective Credit Fixed and Credit Floating term sub-sectors.

Index Formulae

The Credit Index suite construction follows two distinct paths both of which are based on the BEASSA Total Return Index methodology. The calculation methodology applied to the Credit Fixed Index is consistent with that of the BEASSA Total Return Index since the underlying instruments remain fixed semi-annual coupon bonds. The Credit Floating Index is modified to allow for quarterly coupon payments in addition to coupon resets.

Detailed below is the construction methodology of the Credit Fixed Index with the adjustments for the Credit Floating Index presented at the end of the document.

Notation

The constituent instruments in the Credit Indices will be referred to by the subscript i in the formulae that follow. The range spans from i to N, and all sums ($\sum$) referred to below are from $i = 1$ to N, where N refers to the number of the constituent instruments within a given index.

The following notation is used in the index formulae:

t	valuation date
s	settlement date (t + 3)
$c_{i,t}$	the first coupon date for bond i which is on or after t
$c^-_{i,t}$	the coupon payment date for bond i which is before $c_{i,t}$
$c^+_{i,t}$	the coupon payment date for bond i which is after $c_{i,t}$
$Y_{i,t}$	the yield to maturity of bond i applicable to the valuation
$P_{i,t}$	all-in price of an instrument i for settlement on s
V_t	total portfolio value at t
$w_{i,t}$	weight of a constituent instrument at a valuation date
$H_{i,t}$	exponent value used to compute $D_{i,t}$
$D_{i,t}$	s to t discount factor
K_t	proportionality constant – nominal factor
$X_{i,t}$	the ex-coupon portion relating to instrument i on day t
g_i	coupon rate of a bond i, expressed in percent
$N_{i,t}$	the guaranteed portion of instrument i on day t
$E_{i,t}$	the discounted value of the ex-coupon on day t
$R_{i,t}$	the value of the ex-coupon for re-investment on the settlement date
$N_{i,t'}$	the guaranteed portion of instrument i on the first day t of its ex-period
$w'_{i,t}$	weight obtained from the re-basing for instrument i
Guaranteed Portion	the portfolio's guaranteed portion consists of the constituent bond holdings, held in nominal amounts in issue in proportion to such instrument's allocated weight ($w_{i,t}$), as at a valuation date.
Ex-Coupon Portion	the portfolio's ex-coupon portion is the total Rand value of the coupons earned on the nominal holdings in the portfolio's constituent instruments (as at the start of the respective constituent's ex-period), which are yet to be received and re-invested in the portfolio.
Ex-Period	also known as the book's close period. A bond's ex-period defines a period during which any settlement of trade in that bond will not result in the payment of the next coupon.

Initialisation

The indices are based at 100 on 7 November 2005.

At the base date the proportionality constant K_{t_0}, for each index, is determined such that the indices are based at 100 ($V_{t_0} = 100$):

$$K_{t_0} = \frac{V_{t_0}}{\sum w_{i,t_0} \cdot P_{i,t_0} \cdot D_{i,t_0}} \qquad (1)$$

Valuation Date Discount Factor

Credit Fixed total return figures are derived by valuing for settlement t+3, and further discounting to the trade date, in keeping with the BEASSA Total Return Indices methodology. The floating rate notes are, however, valued t+0.

For the Credit Fixed Index, discounting is performed using the market-determined yield to maturity of each constituent, as at the valuation date, to BESA standard settlement date (t+3). Once the value of the guaranteed portion is calculated for settlement date, the result is further discounted to the valuation date.

The total return index includes coupons in their ex-period. Coupons received are re-invested in the portfolio and as such are added to the guaranteed portion resulting in the recalculation of the proportionality constant. Ex-coupons are also valued by discounting them from the receipt to standard settlement date by the appropriate yield to maturity. The resulting ex-coupon value is then further discounted from settlement to the valuation date. Floating rate note coupons are discounted, using the BESA Linear Zero Swap Curve, to trade date.

Settlement to valuation date (s to t) discount factors for fixed bonds are generated as follows:

$$D_{i,t} = \left(\frac{1}{1+Y_{i,t} / 200} \right)^{H_{i,t}} \quad (2)$$

where,

$$H_{i,t} = \frac{s - t}{c_{i,t} - c^{-}_{i,t}} \quad \text{if } c_{i,t} \geq s \quad (3)$$

or,

$$H_{i,t} = \frac{s - c_{i,t}}{c^{+}_{i,t} - c_{i,t}} + \frac{c_{i,t} - t}{c_{i,t} - c^{-}_{i,t}} \quad \text{if } c_{i,t} < s \quad (4)$$

The Guaranteed Portion of the Portfolio

The portfolio's guaranteed portion is described as:

$$N_{i,t} = K_t \cdot w_{i,t} \quad (5)$$

The total value of the portfolio's guaranteed portion on any day t is calculated through the following formula:

$$B_t = \sum N_{i,t} \cdot P_{i,t} \cdot D_{i,t} \quad (6)$$

The Ex-Coupon Portion of the Portfolio

The value of the ex-coupon portion for fixed coupon bond i is:

$$X_{i,t} = N_{i,t'} \cdot g_i / 200 \quad \text{if the instrument is in its ex-period} \quad (7)$$

$$X_{i,t} = 0 \quad \text{otherwise} \quad (8)$$

If the instrument is in its ex-period, the value of the ex-coupon is discounted from the coupon payment date to s, and then from s to t. The formula below describes this procedure.

$$E_{i,t} = X_{i,t} \cdot D_{i,t} \cdot \left(\frac{1}{1+Y_{i,t} / 200} \right)^{\frac{\max(c_i - s, 0)}{c_i - c_i^{-}}} \quad (9)$$

The total value of the portfolio's ex-coupon portion on any day t is:

$$C_t = \sum E_{i,t} \quad (10)$$

Upon receipt of a coupon on its payment date, the coupon will be re-invested in the portfolio on the first trading day whose settlement date is on or after the coupon receipt date.

The ex-coupon value that is re-invested on s is:

$$R_{i,t} = E_{i,t} \quad \text{if t is the last day of the ex-period} \quad (11)$$

$$R_{i,t} = 0 \quad \text{otherwise} \quad (12)$$

Re-basing and Nominal Factor, K_t

There are three instances in which the portfolio's bond holdings may change and are given below:

1.) **Reinvestments.** Coupons are reinvested upon receipt, in all bonds in the portfolio, according to their weights. The reinvestment is executed at the MTM yield to maturity for the bond paying the coupon, on the coupon payment date.

2.) **Reconstitutions.** Each quarter, the constituents of the portfolio will be re-selected and their weights updated. Purchases and sales will be required to mirror the new weightings.

3.) **Term sub-sector changes.** A bond moving from one sector into another must be sold from the term sub-sector it is exiting, and bought by the term sub-sector it is entering. This transaction takes place on the first preceding trading day to the day when the change takes place (preceding the day such bond's term to maturity equals, or is lower than the sector's lower term limit). The instrument will retain the same weighting, but will not carry any ex-coupons with it into its new portfolio – ex-coupons will remain in the former portfolio.

The nominal factor is re-calculated at the re-basing time and its re-calculated value holds thereafter. The formula is as follows:

$$K'_t = \frac{B_t + \sum R_{i,t}}{\sum w'_{i,t} \cdot P_{i,t} \cdot D_{i,t}} \qquad (13)$$

Total Index Value

From the above, we arrive at the total portfolio value on day t:

$$V_t = B_t + C_t \qquad (14)$$

Modified Duration and Convexity

Duration and convexity measures applied in the Credit Fixed and its term split sub-indices will be the conventional all-in ones. Duration and convexity computations will follow specifications laid out in the BESA Bond Pricing Formula, whereby it is assumed that instruments do not go ex-coupon and the settlement is on the standard settlement date. The implication is that the portfolio's guaranteed portion is treated as the only constituent.

The modified duration computation is provided below:

$$dMod = \sum (N'_{i,t} \cdot P_{i,t} \cdot D_{i,t} + E'_{i,t}) \cdot \left[dMod_{i,t} + \frac{H_{i,t}}{2(1+Y_{i,t}/200)} \right] \Big/ E_t \qquad (15)$$

where,

$dMod_{i,t}$	modified duration of bond i for day t
$E'_{i,t}$	are the values of the ex-coupon portions after deducting any re-investments for the day
$P_{i,t}$, $D_{i,t}$, $H_{i,t}$ and $Y_{i,t}$	as defined above.

The convexity computation is provided below:

$$Conv = \sum (N'_{i,t} \cdot P_{i,t} \cdot D_{i,t} + E'_{i,t}) \cdot \left[Conv_{i,t} + \frac{H_{i,t} \cdot dMod_{i,t}}{(1+Y_{i,t}/200)} + \frac{H_{i,t}(2H_{i,t}+1)}{4(1+Y_{i,t}/200)^2} \right] \Big/ E_t \qquad (16)$$

Floating Rate Note Adjustment

Discount Factor

Floating rate notes are valued t+0, i.e. t = s. The discount factor $D_{i,t}$ therefore does not apply.

Guaranteed Portion of the Portfolio

The guaranteed portion is:

$$B_t = \sum N_{i,t} \cdot P_{i,t} \qquad (6i)$$

Ex-Coupon Portion of the Portfolio

The value of the ex-coupon for any FRN i is computed with the formulae below:

$$X_{i,t} = N_{i,t'} \cdot g_{i,t} \quad \text{if the instrument is in its ex-period} \qquad (7i)$$

$$X_{i,t} = 0 \quad \text{otherwise} \qquad (8i)$$

where

$g_{i,t}$ is the coupon to be paid on the next coupon date relative to t, expressed as a percentage (refer to Pricing FRN's Specification Document[2]).

[2] *This document can be sourced from www.bondexchange.co.za*

The ex-coupon portion of a FRN is discounted, using the zero rate plus the trading spread, to trade date:

$$E_{i,t} = X_{i,t} \cdot \left(\frac{1}{1 + \frac{Z_t + TS_{i,t}}{400}} \right)^{\frac{4 \cdot \max(c_i - t, 0)}{365}} \qquad (9i)$$

where

Z_t the zero rate off the BESA Linear Zero Swap Curve on day t

$TS_{i,t}$ the trading spread for instrument i on day t.

The nominal K-Factor is given by:

$$K'_t = \frac{B_t + \sum R_{i,t}}{\sum w'_{i,t} \cdot P_{i,t}} \qquad (13i)$$

Precision and Rounding

The precision and rounding of the Credit Indices will be computed and held to double precision, which is 15 decimal places. All-in and clean prices will be rounded to five decimal places, and durations and convexities published will be rounded to two and one decimal places respectively.

About BESA

The Bond Exchange of South Africa Limited (BESA) is a self-regulatory organisation and holds an exchange licence granted in 1996 by the Financial Services Board (FSB). BESA is the regulator of the listing and trading in interest-rate securities (bonds and derivatives) in accordance with the Securities Services Act, 2004 and its own Rules and Directives.

BESA seeks to promote bond market liquidity by providing a range of services to authorised users. BESA is dedicated to building better markets and facilitating trade through low-cost solutions to issuers, traders and investors alike.

As at the end of December 2007, BESA reported 967 listed securities, issued by 104 issuers, with a total market capitalisation of R863 billion. The South African market remains one of the most liquid markets in the world with the recorded velocity for 2007 of 17 times its market capitalisation.

About Standard Bank

The Standard Bank Group is the largest South African banking group ranked by assets and earnings. The Group had total assets of over R968 billion (approximately $135 billion) at 31 December 2006 and employs more than 40 000 people worldwide. The group has a wide representation which spans 18 African countries and 21 countries outside of Africa with an emerging markets focus.

Standard Bank Group's Corporate and Investment Banking division provides commercial and investment banking services to larger corporates, financial institutions, governments, parastatals and international counterparties in emerging markets. While Corporate and Investment Banking division has two main centres, which are in Johannesburg and London, it offers its financial services and products to clients located in South Africa, a wide range of other Sub-Saharan African countries, leading emerging markets and the world's financial centres.

With its South African heritage, the Standard Bank Group has particular expertise in natural resources, and debt and currency products focused on emerging markets. Through Standard Bank's extensive network of operations around the world, the Corporate and Investment Banking division is well placed to originate and execute financial transactions for clients based in emerging markets.

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