

CCIL SDL Index

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A number of bond indices have emerged during past one decade or so but none of them have attempted to develop an index that represents the market for State Development Loans (SDLs), bonds issued by the State Governments in India. The reasons behind this could be numerous but major among them are (a) large number of small stocks issued by State Governments; (b) illiquid and scattered trade in SDLs; and (c) low level of outstanding stocks vis-à-vis GOI stocks. Frequent new issuances and less frequent trade resulted into a large number of securities with minimal or no trade in the market. As a result, selection and maintenance of bond portfolio for construction of a representative index becomes hard task. However, a significant increase in amount of issuances to Rs 80,570 crore and Rs 71,474 crore respectively in 2007-08 and 2008-09, necessitates exploring the possibilities of tracking the market for SDLs through the construction of a representative Index. In view of this, an attempt was made to construct a representative SDL Index named CCIL SDL Index. A brief description on the construction methodology is presented below.

Characteristics of SDL:

Prior to going into the details of SDL Index construction it is necessary to note a few specific characteristics of SDLs. The trade in SDLs differs from that of the G-Secs in the following aspects, which make the Index construction tedious

- Unlike GoI Securities (G-Secs), SDL issuances are not structured and don't have any auction calendar.
- A new security is issued almost every month, some times even twice or thrice in a month and no re-issuance of the same security
- A minimal or no secondary market activity in the previously issued securities, only the recently issued securities are traded the most
- SDLs are generally issued for a maximum tenor of 10-years

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METHODOLOGY:

Selection of securities:

Although there are about 30 states (including NCT Delhi and Pondicherry) that have been issuing SDLs, we have selected a representative 14 major states based on their contribution to the total SDL trade volumes as well as outstanding stocks. From each selected state, the most recently issued security is chosen for inclusion in the portfolio of CCIL SDL Index.

Rebalancing:

The portfolio of SDL Index is rebalanced at the beginning of each the month. While the profile of 14 selected states remains the same, newly issued security of the selected state will take the place of existing security at the beginning of every month. Further, if a State which is not included in the basket of the securities for the portfolio of the Index but has been witnessing good secondary market trading and recent issuances with higher outstanding, such Sate will be included in the Index and will replace a comparatively low performing State (in terms of secondary market trading interest and outstanding) already in the index.

Price assimilation:

Clean price: Since the trading in SDLs is scattered and minimal, the clean prices of securities, when not traded on a particular day, are generated using bond pricing formula based on derived yield. The yield for generating the price is derived by adding the previous 30-day average of spread between SDL and central government securities (G-Sec) to the yield of G-Sec with a corresponding residual maturity. For the said purpose, CCIL Sovereign yield curve is used to determine the corresponding yield.

$$PS = S((C/(1+YS_t)^n) + 100(1+YS_t)^n)$$
$$YS_t = YG_t + AS$$

Where PS = Clean price of SDL on day x

C = Annual coupon of SDL

n = Years to maturity of SDL

YS_t = Yield of SDL with a residual maturity t on day x

YG_t = Yield of GoI-Sec with a residual maturity t on day x

AS = 30 day average spread between SDLs and GoI-sec from day x-1 to x-31

Dirty price: The dirty price arrived by adding the accrued interest to clean price and based on that dirty price the Total Return Index (TRI) is normally calculated. But, the pattern of trade in SDLs with a complete replacement of the portfolio almost every month by new SDLs, the accrued interest becomes negligible and there is no continuity in the returns accumulation. In order to ensure accumulation of returns in the TRI, we have calculated the weighted average of clean price and coupon across the selected 14 SDLs in the index portfolio. The accrued interest was calculated based on the weighted average coupon taking a common coupon payment date as Jan 1, 2007 and then every 6 months thereafter, the start date of index, so that the returns accumulation will start from the beginning of the index.

Index construction: Once the prices were calculated, the procedure for construction of both PRI and TRI was similar to that of bond index based on market capitalization using the following formulae. The CCIL SDL Index was compiled starting from Jan 1, 2007. Since the Jan 1, 2007 was a holiday, the traded prices of previous working day were used for computation of Index on Jan 1, 2007.

$$PRI_t = PRI_{t-1} \times WAP_t / WAP_{t-1}$$

$$TRI_t = TRI_{t-1} \times WADP_t / WADP_{t-1}$$

Where PRI_t & PRI_{t-1} = Principal Returns Index on day t & t-1 respectively

TRI_t & TRI_{t-1} = Total Returns Index on day t & t-1 respectively

WAP_t & WAP_{t-1} = Weighted average price on day t & t-1 respectively

$WADP_t$ & $WADP_{t-1}$ = Weighted average dirty price on day t & t-1 respectively

Duration: similar to the calculation of duration in CCIL Bond Index, duration of CCIL SDL Index was calculated using the either traded yield or derived yield, when the traded yield not available.

Performance of Index:

Performance of CCIL SDL Index, as depicted in the chart, has largely reflected the trends displayed by 10-year G-Sec yield in the corresponding period. The CCIL SDL PRI declined by about 2.7% during 2007 in response to a marginal increase in the yield of 10-year G-Sec by 17 basis points in the same period. However, the TRI posted a 5% increase on account of coupon accumulation, as the weighted average coupon amounted to about 8%. Similarly, the indices, PRI and TRI, posted substantial increase of 15% and 22%, respectively in response to a significant fall in 10-year G-Sec yield by about 2.5% during 2008, as presented in Table 1.

Year	PRI Change (%)	TRI Change (%)	Y-o-Y change in 10-year Yield
2007	-2.7740	5.0472	0.1728
2008	15.4142	22.3732	-2.5579

