SDL Index for State Development Loans

For the State Development Loans (SDLs), CCIL SDL index serves as a benchmark against which the performance of State's securities can be measured. CCIL SDL index consists of 14 most recently issued 10 year maturity securities of 14 states. The price movements are captured in the Principal Returns Index while the Total Returns Index provides the change due to both the price movements and accrued interest.

The Clearing Corporation of India Ltd.

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1. INTRODUCTION

The State government securities market is the prime funding avenue for the state governments. Principal characteristics of State Developments Loans (SDLs) are large number of small issues, illiquid and scattered trades, and lower outstanding volume as compared to central government securities. Frequent new issuances have resulted into a large number of securities with scanty trading in the market. As a result, selection and maintenance of SDL portfolio for the construction of a representative index is challenging.

SDLs are issued in the primary market through normal auctions conducted by the Reserve Bank of India (RBI). There exists a secondary market for SDLs and they are traded and reported on the Negotiated Dealing System - Order Matching segment (NDS-OM). As of FY 2018, SDLs accounted for about 5% of the total outright trades. As of FY 2018, trading through NDS-OM accounted for approximately 25% of the market share, while the remaining 75% were OTC trades, subsequently reported on the platform.

ABOUT CCIL

The Clearing Corporation of India Ltd. (CCIL) was set up in 2001 to provide an institutional infrastructure for the clearing and settlement of transactions in government securities, money market instruments, foreign exchange and other related products with the objective of bringing about efficiency to the transaction settlement process, and mitigating the systemic risk emanating from settlement related problems and counter party risk. CCIL is a payment system operator, authorized by the Reserve Bank of India (RBI) under PSS Act 2007 to provide guaranteed settlement in TREP, Securities, Forex and Rupee Derivatives market. In view of its critical importance to the Indian financial system, CCIL has been designated as a critical Financial Market Infrastructure (FMI) by the RBI and it has given CCIL the status of a Qualifying Central Counterparty (QCCP) on January 1, 2014. CCIL has also been accorded recognition as a “third party CCP” with effect from March 29, 2017 under the European Market Infrastructure Regulation (“EMIR”).

CCIL offers guaranteed settlement services for government securities comprising of outright and repo and TREP markets in the money market segment. In the forex market, it offers guaranteed settlement to all interbank USD/INR forex transactions, inclusive of USD/INR forward transactions. It also offers settlement services to rupee derivative and cross currency transactions. CCIL through its subsidiary Clearcorp Dealing Systems (India) Ltd. (CDSL) manages trading platforms in the Money and G-Sec market on behalf of the RBI and also owns trading platforms in the fixed income, money, forex, and derivative markets. CCIL also manages the trade repository for the interest rate, forex and credit derivatives market in India, which has enhanced the level of transparency in the markets through data dissemination and publication. CCIL’s wholly owned subsidiary Legal entity Identifier India Limited (LEIL) is the Local Operating Unit (LOU) in India for issuing globally compatible Legal Entity Identifiers (LEIs) in India.

2. RATIONALE

The State Development Loans (SDLs) market is the illiquid segment of the Indian bond market. An SDL index serves as a benchmark for SDL portfolio management and acts as an indicator of the SDL market performance. The SDL portfolio performance which driven by their coupons as well as the appreciation of the asset, are monitored by the indices. A well-constructed index mirrors the economic policy changes of the government and structural reforms, which have a bearing on the interest rate in the economy.

CCIL is the Central Counterparty for all transactions in the Indian Government Securities market and follows the process of netting through novation to provide guaranteed settlement for all secondary market transactions. The trading information is used to compute the volume weighted average prices of all traded securities. The theoretical price of the securities is also computed using an YTM Curve model developed internally.

In order to capture the movements in the SDL market, the two major indices proposed are:

1. CCIL SDL PRI Index: An index that considers price movements (capital gains or losses) of the 14 SDLs that makes up the index.
2. CCIL SDL TRI Index: An index that considers price movements (capital gains or losses) as well as coupon payment by 14 SDLs that makes up the index.

3. DATA DETAILS

- **Data Source**

The 10 year state development securities issued by 14 selected states are chosen for inclusion in the portfolio of CCIL SDL Index.

- **Issuer**

Only securities issued by the State Governments are considered.

- **Price Details**

State government securities are illiquid and thinly traded. So, we use a different approach for the estimation of prices of the securities comprising the SDL index. Bond pricing formula using derived yield is used for the price estimation. The methodology for estimation of the state government securities prices is as below:

- The residual maturity in years is estimated for individual state government securities comprising the SDL index.
- The exact central government security yield is interpolated for the residual maturity from the estimated model yield.
- The weighted average spread over the G-sec yield is estimated for the SDLs with trading volume greater than Rs. 5 crore and residual maturity greater than equal to 7 years.
- The G-sec yield of each residual maturity is marked-up by adding the estimated weighted average spread.
- The marked-up yield is used for the estimation of prices for each of the state government securities comprising the SDL index.

4. INDEX LOGIC

- **Bond inclusion criteria**

There are 29 states and 7 union territories in India. However, all states and union territories do not issue bonds. Also, the issuing state governments make frequent issues of bonds for various tenors. 14 states, based on the trading volume in the previous financial year, are included in the SDL index computation. The states remain the same for the ongoing financial year, while the security changes every month. Only recently issued 10 year securities of the selected states are included. In case there is no new 10 year issue by any state, immediate previous 10 year issued SDL would be considered.

- **Bond Exclusion criteria**

All newly issued SDLs by the selected state governments having maturity greater than or less than 10 years are excluded.

- **Base Date and Value**

For the calculation of CCIL SDL index, January 01, 2007 has been selected as the base date with a base value of 1000.

- **Weighting Scheme**

Market capitalization based weighting scheme is applied to each security. The weight assigned to each security is determined as the ratio of the individual security's market capitalization to the total market capitalization of all securities constituting the index.

$$w_i = \frac{Price_{\ i} * Outstanding\ Amount_i}{\sum_{i=1}^{n} Price_{\ i} * Outstanding\ Amount_i}$$

- **Calculation Details**

CCIL SDL index reflects the change in the value of the index through the Total Return Index (TRI) and Principal Return Index (PRI). The Dirty price and clean price of a bond are weighed depending on the share of the security's market capitalization in the market capitalization of the portfolio. The Total Return index (TRI) reflects the change in the index due to market capitalized weighted price movement and accrued interest. The Principal Return Index (PRI) reflects the change in the index due to a movement in the market capitalized weighted price. It is assumed that the coupon payment gets reinvested back into the index. In addition, the market capitalization weighted duration, yield and coupon of the entire portfolio are also computed.

Total Return Index: The total return index is the absolute return that the bond portfolio offers and it includes coupon accrued and capital gains (losses). In this index the coupon accrued for the entire portfolio is distributed on 1st January and 1st July (twice) each year. The total return index is calculated every day by multiplying the previous day's index value by the ratio of the portfolio's weighted average gross price to the previous day's weighted average gross price.

$$TR_{I,t} = TR_{I,\ t-1} \text{ x } \{(\Sigma^{n}_{I=1} WGP_{i,t}) / \Sigma^{n}_{I=1} WGP_{i,\ t-1}\}$$

where, WGP is the weighted average dirty price of all the securities in the portfolio. TR is the Total Return Index as of that day.

Principal Return Index: The principal return index is calculated every day by multiplying the previous day's index value by the ratio of the portfolio's weighted average clean price to the previous day's weighted average clean price.

$$PR_{I,t} = PR_{I,\ t-1} \text{ x } \{ \Sigma^{n}_{I=1} WCP_{i,t} / \Sigma^{n}_{I=1} WCP_{i,\ t-1}\}$$

where, WCP is the weighted average clean price of all the securities in the portfolio. PR is the Principal Return Index as of that day.

Duration: Duration is used to measure the effective life of the bond and is an indicator of the interest rate risk of a portfolio. The duration of the index is calculated as the sum of the weighted duration of individual bonds in the basket.

$$D = \Sigma^{n}_{I=1} D_i W_i$$

where, D_i is the duration of the component bond i and W_i is the relevant weight based on market capitalization of bond i.

Coupon: The coupon of the portfolio is the weighted average coupon of the outstanding volume of all the bonds in the index portfolio.

$$C = \Sigma^{n}_{I=1} C_i W_i$$

where, C_i is the coupon of the bond i and W_i is the relevant weight based on market capitalization of bond i.

5. INDEX REBALANCING

Securities in the portfolio of SDL Index is rebalanced at the beginning of each the month. On the other hand, the outstanding amount is rebalanced every six months (i.e. on 1st January and 1st July). While the profile of 14 selected states remains the same, a newly issued security of the selected states will take the place of the existing security at the beginning of every month.

Coupon Allocation

Weighted average coupons accrued over the last six months are allocated to portfolio on 1st January and 1st July (twice) each year. The total coupon amount of the portfolio calculated on 1st January is allocated on 1st July. Similarly, the total portfolio coupon amount calculated on 1st July is allocated on 1st January of the next year. The coupon amount is allocated to individual securities based on their market capitalization.

6. TREATMENT OF HOLIDAYS / NON-WORKING DAYS

The CCIL SDL Index values are estimated for all calendar days. Immediate previous working day's derived yield is used for the price estimation and index values for holidays/ non-working days.

7. INDEX RELEASES

- The index values are released at the end of each working day. On holidays/ non-working days, the index value gets released on the immediate next working day.
- The index value is available each working day on CCIL web portal www.ccilindia.com
- The CCIL index values are also available on Bloomberg (ticker).

TECHNICAL NOTE:

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CCIL > Research > CCIL Publications > Collection of Articles > Fixed Income > CCIL SDL Index, Jun 2009, Golaka C Nath & Tulsi Lingareddy

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