

FACTBOOK 2022

The Clearing Corporation
of India Limited

ORGANIZATION

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. The objective was to bring efficiency to the transaction settlement process and mitigate the systemic risk emanating from settlement related problems and counterparty risk. CCIL is a payment system operator, authorized by the Reserve Bank of India (RBI) under the Payment and Settlement Systems (PSS) Act 2007 to provide guaranteed settlement in Government Securities (G-Secs), Triparty Repo (TREP), 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). CCIL has also been accorded recognition as a “third country CCP” with effect from March 2017 under the European Market Infrastructure Regulation (“EMIR”), following recognition of India as an equivalent regime by the European Commission.

CCIL commenced business operations in the securities market on February 15, 2002 with settlement of Government Securities comprising of outright and repo transactions reported on the Negotiated Dealing System (NDS) of RBI. It currently offers guaranteed settlement services for the Government Securities market comprising of outright trades and for market repo and triparty repo in the money market segment. In the forex market, it offers guaranteed settlement to all interbank USD/INR transactions (Cash/Tom/Spot/Forward). It also offers settlement services for trades in rupee derivatives segment (Interest Rate Swaps and FRAs) and cross currency transactions (through CLS Bank). CCIL, through its wholly owned subsidiary Clearcorp Dealing Systems (India) Limited (Clearcorp), manages trading platforms in the Money and G-Sec market on behalf of 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 markets and CP/ CD transactions in India. CCIL has leveraged its unique position in the Indian financial system to offer other value added services to the market. It provides portfolio compression services for OTC derivatives like interest rate derivatives and forex forwards. These compression exercises have resulted in significant reduction in notional outstandings in the relevant OTC derivative market. CCIL’s another wholly owned subsidiary LEIL (Legal Entity Identifier India Limited) is the Local Operating Unit (LOU) in India for issuing globally compatible Legal Entity Identifiers (LEIs) in India. LEIL has been accredited by the Global Legal Entity Identifier Foundation (GLEIF) as an LOU for issuance of LEIs in December 2016 and is among the first LOUs to be accredited. RBI has designated LEIL as an ‘Issuer’ under the PSS Act, 2007 since October 2016.

The business models of the company have been based on strong domain expertise, duly aided by the efficient Information Technology (IT) infrastructure. CCIL has received the ISO/IEC27001:2005 certification from M/s Den Norske & Veritas (DNV.GL) in July 2006 for securing its information assets, and in July 2015, CCIL has been recertified for conforming to the new standard ISO 27001:2013 from DNV.GL.

CCIL is a member of the CCP12, a Global Association of CCPs. "RISK", the renowned global magazine in its 25th year special edition, identified CCIL as a Firm of Future amongst global CCPs/Exchanges based on its Risk Management capabilities. CCIL is the only entity outside the developed countries to get such recognition.

CORE COMPETENCE

CCIL has built its domain expertise in its core areas of business and used the same, not only for its own growth model but also to provide cost effective and efficient solutions to market participants. The company has expanded the scope of its operations by leveraging the infrastructural facilities at its disposal for introducing new services/products that have helped to widen and deepen the debt, money, OTC derivatives and forex markets.

CCIL as a Central Counterparty has helped in reducing counterparty risk. Settlement through multilateral netting has facilitated reduction of liquidity requirements for the entire system. The significant reduction in the number and overall value of payments between members has enhanced the efficiency of the payment system and reduced settlement costs associated with growing market volumes. The increase in netting factor due to novation by CCIL in various settlement segments (Securities/Funds/Currencies) over a period indicates the efficiency achieved in management of market liquidity.

As a Trade Repository for transactions in various OTC derivative instruments, CCIL has enhanced the level of transparency in the markets through data dissemination and publication. Trade Repositories (TR) are entities that maintain a centralised electronic database of OTC derivatives transaction data. The centralised database provides both a granular view of positions and exposures product-wise and counterparty-wise, as well as a ringside view of market concentration. It thereby supports risk reduction, operational efficiency and cost savings for the market as a whole. Along with interest rate OTC derivatives, CCIL has initiated the public dissemination of statistics of major inter-bank OTC forex derivative trades on its website from April 2015. Since August 2016, aggregated trade data comprising of number of trades and volumes in respect of client trades in OTC forwards, FX options and INR-IRS is also being disseminated with some lag depending upon the liquidity of the product as per global practice and regulatory approvals. CCIL also publishes data in respect of interbank and client transaction on an aggregated basis in its monthly bulletin "Rakshitra".

The market has benefited from information regarding prices and volumes traded and also the information on each member's own portfolio. The Regulator also gets information on the exposure of the market to various instruments and entity level exposures. Central collection of data on all OTC derivatives has helped provide greater transparency on trade positions, prices and transaction volumes and assists the regulator in effective monitoring of systemic risk. Following the recognition of CCIL as a "third country CCP", branches of European Banks benefit from favourable capital requirements under CRR (Capital Requirements Regulations) for their exposures to CCIL.

Through its wholly owned subsidiary, Clearcorp Dealing Systems (India) Ltd., CCIL offers and manages various trading platforms in the markets that it serves. The electronic trading platforms have greatly enhanced the level of transparency, facilitated real-time dissemination of the information and price discovery in the markets.

In line with the global movement towards transparency in benchmark setting, Indian markets are gradually moving to the release of key benchmarks used by the market in an impartial and transparent manner. CCIL has been identified as a key player in this initiative by the Reserve Bank and has been designated as the Calculation Agent for eleven benchmarks currently being released by the Benchmark Administrator viz., Financial Benchmarks India Pvt. Ltd. (FBIL). CCIL acts as the Calculation Agent for the computation of FBIL Overnight MIBOR, Term MIBOR, Options Volatility Matrix Rates, CD Curve, TB Curve, Repo Benchmark (MROR), Forward Premia Curve, MIFOR and MIBOR-OIS market respectively. Out of these, the FBIL Term MIBOR and FBIL Options Volatility Matrix Rates are polled on the NDS-CALL and FX-CLEAR platforms respectively. The Overnight MIBOR is based on the first hour of trading on the NDS-CALL platform, while the MROR is based on the trades on the CROMS platform. The CD Curve and TB Curve are based on the transactions on the F-TRAC and NDS-OM platform respectively. The benchmarks related to the OTC derivative markets like the FBIL Forward Curve and MIOR-OIS Curve are estimated from the trades reported on CCIL's Trade Repository. The FBIL MIFOR curve is derived from the FBIL forward premia curve and the LIBOR for the day. CCIL, in its role as the Calculation Agent for financial benchmarks has facilitated the transition of the MIFOR benchmark which references to the LIBOR rates to the Alternate Reference Rate (ARR) i.e. the SOFR rates. Since June 2021, CCIL is calculating the Adjusted MIFOR and Modified MIFOR benchmarks which reference the compounded SOFR rates. The Modified MIFOR is the benchmark for all new MIFOR contracts after December 31, 2021, while the Adjusted MIFOR will be used for valuation of legacy MIFOR contracts.

CCIL has taken initiatives to develop and disseminate G-Sec, SDL and T-bill indices and reference rates like the Forex Spot rates for the benefit of the market participants. It is also disseminating Market Liquidity Indicators for the Government Bond Market since May 2013 on the website tracking liquidity parameters like bid-ask spread, order book size, impact cost, turnover ratio etc.

BUSINESS PROCESS IN THE ORGANISATION

CCIL is a well-knit and integrated organization that has smooth linkages within the internal departments, as well as external entities including the Regulators. The entities which participate in CCIL's settlement process are known as 'Members or Associate members' of CCIL. The company has prescribed various membership eligibility criteria for such system participants (Members/Associate Members) to ensure their financial and operational robustness for meeting obligations arising from their participation in CCIL's settlement operations. The Membership eligibility criteria for various settlement segments of CCIL have been spelt out in CCIL's Bye-Laws, Rules and Regulations, which are displayed on CCIL's website www.ccilindia.com.

CCIL's Membership Department grants admission to eligible entities participating in the money, debt, derivative and foreign exchange/currency markets. The members are admitted after due verification of adherence to the eligibility criteria, approval by CCIL's Committee of Directors on Risk Management/MD and completion of documentation formalities. They are required to get their membership activated by contributing to the Default Fund/Settlement Guarantee Fund (SGF) collateral in the form of Cash/Govt. Securities towards margins for transactions to be taken up for clearing and settlement by CCIL, before commencement of clearing and settlement of their trades through CCIL. It is thereby ensured that a member has adequate cover in terms of margin contribution with CCIL for being extended guaranteed settlement of its transactions. Once the membership is activated on receipt of SGF/Collateral contributions, CCIL starts receiving trades from the members. The respective operational departments' then undertake clearing and settlement activities that involve novation, netting and generation of obligations. The Risk Management Department at CCIL is primarily responsible for ensuring that the risk management processes and systems in place are adequate to cover the risks arising out of offering guaranteed settlement of trades in different segments.

The Fixed Income & Money Market Operations Department provides support to TREP Dealing and Settlement of trades in tri-party repo, clearing and settlement (including novation, netting and generation of settlement obligations) of Outright and Repo trades in Government Securities. The Collaterals and Funds Management wing of Operations (Fixed Income & Money Market) Department ensures funds settlement in the books of RBI/Designated Settlement Banks (DSB) for Securities(including Tri-party Repo), Forex and Derivatives segments. It also ensures final funds settlement in the accounts of the concerned members with RBI and also ensures timely recording of receipt/refund of SGF/Collateral contributions from/to members and prompt servicing of corporate action on members' SGF/Collateral contributions. CCIL has put in place Lines of Credit (LOC) in Rupee and foreign currency (USD) to take care of temporary shortage of liquidity due to non-fulfilment of settlement obligation by a member. The entire process from activation of membership to settlement of trades is system driven and the IT Department ensures that the necessary hardware and software solutions are in place.

MARKET SEGMENTS

The main market segments currently covered by CCIL are :

- Government Securities
- Money Market
- Forex
- Derivatives
- Trade Repository

A brief overview of the various market segments covered by CCIL is given below.

1. Government Securities

CCIL commenced its operations with settlement of secondary market transactions in government securities under DVP II mode, with Guaranteed Settlement as a Central Counterparty. CCIL switched over to the DVP III mode of settlement from April 2, 2004. CCIL facilitates clearing and settlement of all secondary market transactions in government securities - both outright and repo transactions dealt and reported on NDS-OM and CROMS platforms. CCIL introduced Multi Modal Settlement Banks (MMSB) module in June 2008, thereby facilitating funds settlement in the books of Settlement Banks for those NDS members who are not permitted to settle funds leg of the secondary market government securities transaction in RBI Current/RTGS Settlement Account. The final settlement is achieved at the concerned department of RBI i.e. Public Debt Office for SGL/CSGL transfers and Deposits Account Department, Mumbai for funds settlement. Following the consolidation of the various internal systems at RBI, there was a gradual shift during 2012-13 to the Core Banking Solution (eKuber) implemented at RBI. Funds settlement shifted to CBS from June 2012 and securities settlement shifted to CBS from October 2012 onwards. The inception of guaranteed clearing and settlement of trades in government securities along with multilateral netting has enabled RBI to push further reforms in this market such as facilitating same day buy and sell, covered short-selling, repo rollovers, When Issued market etc. Clearing member structure was introduced in the Securities settlement segment during March 2020, where there is segregation of collateral contribution between proprietary and client trades, Supporting the RBI's initiative to facilitate retail trading in the G-Sec market, CCIL from August 2016, has enabled the settlement of demat G-Sec trades of Retail Individual Investors, received from CCIL Members who are Banks and also depository participants. Further, the introduction of Tiered membership structure in March 2020 has facilitated a Trading entity who is not a member of CCIL to seek direct access to trading system and settle clients' outright and repo trades through a Clearing Member of CCIL.

CCIL has played a significant role in the Central Bank's initiative to encourage retail participation in the government securities market. The RBI Retail Direct Trading platform launched on November 12, 2021 is an initiative by the Reserve Bank of India to encourage retail participation in the primary and secondary segment of this market. CCIL has been appointed as the aggregator/receiving office by RBI for the purpose of primary issuance of Government Securities and custodian of Retail Direct Gilt accounts. Through this initiative, retail investors can participate in the primary issuance of all government securities like, Central government dated securities, Treasury Bills, State loans and Sovereign Gold Bonds.

2. Money Market

CCIL was authorized by RBI, to act as a Triparty Repo Agent and to undertake CCP clearing of Triparty Repo transactions under its securities segment with effect from November 5, 2018. It facilitates CCP clearing of Triparty Repo transactions in government securities and also performs the role and responsibilities of a Triparty Repo Agent as per Repurchase Transactions (Repo) (Reserve Bank) Directions 2018. "TREPS" (Triparty Repo Dealing

System), an anonymous order matching system, of Clearcorp Dealing Systems (India) Ltd, is the trading platform that facilitates borrowing and lending of funds against G-Secs under Triparty Repo. The trades from the outright, Repo and TREP market flow seamlessly for settlement. The securities equivalent to outstanding borrowing is debited to Members' Gilt Account with CCIL and corresponding credit is given to lenders in their Gilt Account with CCIL. Repo eligible entities can seek membership to TREPS Dealing Segment of Clearcorp and Securities settlement service of CCIL. CCIL, apart from guaranteeing all transactions in the market repo segment since inception as part of its CCP function, also manages the anonymous Order Matching platform for Repo trades (CROMS) since 2009, through its wholly owned subsidiary Clearcorp Dealing Systems (India) Limited. CROMS facilitates dealing in Market Repos in all kinds of Government Securities through its completely anonymous order matching module. It enables dealing in two kinds of Repos, (1) Basket and (2) Special Repos. Since its introduction, repo market participants have largely preferred to undertake their repo operations on the order matching segment of the CROMS platform. Since April 2013, all OTC bilateral market repo deals in G-Secs are also being reported on the CROMS platform.

3. Forex Segment

The settlement of Forex transactions started from November 8, 2002. This segment accepts inter-bank Cash, Tom, Spot and Forward USD-INR transactions for settlement through a process of multilateral netting. CCIL has been granted an 'Authorized Person' License under FEMA 1999 by RBI for the conduct of foreign exchange clearing and settlement operations and activities related thereto.

CCIL switched to a Payment v/s Payment (PVP) basis of settlement w.e.f. April 2015. Trades are subjected to an online exposure check. Net exposure limits are set for members in both INR and USD terms. The Company commenced the settlement of forex forward trades with guarantee from the trade date on December 1, 2009. In this segment all matched forward trades with a residual maturity of upto 13 months are eligible for guarantee. Novation occurs at the point in time when the trade is accepted for guaranteed settlement by CCIL. In June 2014, FEDAI mandated that all interbank forex forward transactions have to be settled through CCIL. Since February 2021, the Clearing Member structure has been implemented in Forex Forward settlement segment. CCIL initiated the biannual portfolio compression cycle for cleared forward INR/USD trades in March 2015.

CCIL started the settlement of cross-currency deals through the CLS Bank from April 6, 2005. Through this, CCIL aggregates trades reported by all Member Banks and enables banks to collectively enjoy the benefits of cross currency settlement through CLS Bank. This is a unique experiment whereby settlements of an entire country are being achieved through a third party arrangement.

4. Derivatives

CCIL commenced multilateral net settlement of cash flows arising out from Rupee IRS trades on a non-guaranteed basis from November 27, 2008. In a move to provide

guaranteed settlement in the Rupee IRS derivative market, CCIL launched CCP clearing of Rupee denominated IRS and FRA on March 28, 2014. The guaranteed settlement INR-IRS market referenced to the O/N MIBOR benchmark found wide acceptance by the market. CCIL commenced guaranteed settlement of the IRS derivative transactions referencing the MIFOR benchmark on November 19, 2018. Trades dealt on Clearcorp's ASTROID platform are guaranteed for settlement from point of trade.

Since July 2011, CCIL has commenced portfolio compression for non-cleared Rupee IRS trades of its members. From March 2017, CCIL started incorporating Cleared INR-IRS trades into the portfolio compression exercise along with non-cleared trades. This exercise in the OTC IRS market is aimed at reducing the overall notional outstanding and the number of outstanding contracts by identifying economically redundant trades for early termination. Following demand from market participants, CCIL has from financial year 2021-22 started conducting the compression exercise for MIBOR linked OIS transactions on a quarterly basis.

In order to enhance the reach of settlement services of CCIL to retail and non-retail participants, Clearing Member (CM) was launched in the Rupee Derivatives (Guaranteed) Settlement Segment for IRS trades both concluded bilaterally and for those dealt on the ASTROID Dealing platform in November 2020.

5. Trade Repository

a) IRS/FRA and FOREX DERIVATIVES

CCIL launched the trade reporting platform for Rupee IRS and FRA on August 30, 2007. The instruments covered for trade reporting on this platform are IRS, Fixed Float and Basis Swaps (Upto maximum maturity of 10 years) and FRA with maximum maturity of 10 years. Since December 2013, all client level rupee IRS transactions are being mandatorily reported on CCIL's Trade Repository. Besides providing an automated central trade processing infrastructure, CCIL also extends post-trade processing services like interest rate reset, holiday handling, tracking payment obligation of members on their outstanding contracts etc. CCIL commenced multilateral net settlement of cash flows arising from IRS trades on non-guaranteed basis from November 27, 2008. CCIL has been authorized to act as a Collection Agent for stamp duty for OTC derivative trades reported to CCIL's Trade Repository w.e.f July 2020. CCIL TR also captures all Non-Deliverable Derivative Contracts (NDDC) w.e.f. June 1, 2020. Effective January 1, 2022, CCIL has facilitated the reporting of IRS trades linked to the Modified MIFOR benchmark (linked to SOFR) on its Trade Repository.

CCIL has also developed a Trade Repository, for the purpose of reporting of CDS trades in the market in December 2011. CCIL launched its Trade Repository services for OTC Foreign Exchange Derivatives on July 9, 2012.

The first phase of the OTC foreign exchange (FX) derivative trade repository service began with the capture of all inter-bank forex forwards and swaps in the USD-INR currency pair, and currency options in FCY-INR. The second phase covering all interbank FCY-INR,

FCY-FCY Forwards, Swaps and FCY-FCY Options was operationalised with effect from November 5, 2012. From April 2013, banks report forex derivative trades (forwards and options) concluded by them with clients for value beyond a threshold of USD 1 million. The final phase in December 2013 involved the mandatory reporting of all inter-bank and client level Cross Currency swaps, FCY IRS/FRA and also client level Rupee IRS transactions. From July 2016, banks are reporting all Client FX Options without a threshold. The threshold for forex forward trades for clients was removed from October 2017 and now all the trades are required to be reported to CCIL TR. From August 2016, banks are using CORE platform for the weekly regulatory report submitted to RBI for FCY/INR OTC FX Options. CCIL's Trade Repository has been extended to Interest Rate Options and Swaptions since March 2019. CCIL has also facilitated the reporting of structured interest rate and forex derivatives trades effective January 3, 2022.

b) F-TRAC

The F-TRAC platform launched on December 1, 2011 is an internet based Trade Reporting system facilitating reporting of secondary market trades in (i) CDs (ii) CPs and (iii) Market Repo transactions in Corporate Bonds/Certificates of Deposit/Commercial Papers/NCDs of original maturity of less than one year. F-TRAC operates in a straight through processing (STP) environment with linkages with the clearing corporations of stock exchanges for settlement of trades reported on the system. The reporting system had initially gone live as a FIMMDA owned Platform. F-TRAC ownership was taken over by Clearcorp on June 2014. From December 2017, F-TRAC facilitates reporting of all primary market issuances of CPs. The primary market reporting of CDs has been facilitated on this platform from June 2019 onwards. This Platform is now operated by CCIL and is regulated by RBI as a Trade Repository.

Associated Business Teams

The activities in the various market segments are supported by the following business teams:

1. Risk Management

Risk Management is now recognized as the most important objective for which settlements are routed by market participants through CCPs. They are increasingly being treated as systemically important and there is a huge focus on the resilience of CCPs. For CCPs, risk management function is therefore assuming maximum importance. CCIL offers guaranteed settlement of trades in Government Securities (Outright, Market Repo and Triparty Repo), forex and Rupee derivatives. For cash products, the risks arise mainly on account of settlement failures due to default by counterparties. In case of derivative trades with longer maturity, inability to meet day to day margin requirements by the members may also pose considerable risk. CCIL seeks to manage these risks through appropriate valuation of positions/ trades and collection of margins so that the ultimate risks to its members are

either eliminated or reduced to the minimum. In case of CLS settlement, CCIL does not become a CCP to the trades but manages settlement related risk within the CLS settlement parameters by setting exposure limits duly supported by collaterals.

CCIL has developed a web based real time information system called CCIL Integrated Risk Information System (CCIL IRIS) which has been made available to the members since September 2014. It provides members with online information related to their status of trade acceptance, liquidity exposures, margin and collateral related information, contributions to default fund, imposition/ withdrawal of various margins and settlement status of trades in various segments. The system provides secured access for trade level details, details of collateral, margin requirements etc. on real time basis with adequate mobility (i.e. the system is accessible anytime from anywhere). It also acts as a very good tool to manage liquidity exposures. The system has been enhanced by adding new functionalities such as IP based access control and Web Communication Facility (WCF) which facilitates download of members' data directly into their internal system without manual intervention. Further, additional functionalities viz., calculator for estimating the margin requirements for proposed trades in securities segment and collateral position simulator have been built in the system. Risk Management processes are designed in a manner such that the margining process remains efficient and risk-based. Moreover, while designing the processes, due care is also taken to address segment-specific issues.

CCIL has in place daily back testing processes for all the segments, where it offers CCP clearing, which ensures the efficacy of the margining models in the changing market scenarios. Moreover, CCIL also runs a daily stress test to ensure adequacy of the resources to meet any eventual defaults that may arise during extreme but plausible market conditions. Member contributed Default Fund and Settlement Reserve Fund to handle losses arising out of default by participant(s) and Contingency Reserve Fund to handle non-default losses are in place. All the risk management processes are benchmarked against the International Standards prescribed by CPMI-IOSCO for a CCP. Even during the COVID19 pandemic, CCIL has upgraded and realigned its Risk Management processes to tackle emerging risk scenarios and improve the efficiency of its Risk Management Framework. The most notable achievement during the period is implementation of client clearing model with tiered participation and auction based model for default handling in derivative segments.

All the risk management models and processes are periodically vetted by independent external experts. A risk management expert from XLRI Jamshedpur has carried out the review for two year period 2019-21 and found the risk management processes and margin models to be robust and in line with the current market.

2. Membership

The Department accepts requests for membership from eligible institutions, admits them as Members/Associate Members after completion of the legal and documentation formalities, initiates activation of members before commencement of their dealing with CCIL and engages

in an ongoing tracking of members' performance and review of CCIL's membership. The Department also carries out periodically, a Membership Review in respect of all the members to ensure their continued adherence to the prescribed membership eligibility norms of the respective business segment and initiates disciplinary action against the non-conforming members.

3. Operations - Fixed Income & Money Market

The Department provides a dedicated help desk for TREP Dealing System and attends to the functional queries received from members. Roles and responsibilities of the Department include securities and TREP settlements on multilateral netting basis. The Securities Line of Credit, its review and seeking replacement of securities are also done by the department. The Department also acts as CCIL's in-house custodian and accepts/refunds, maintains and services the margin/collateral contributions received from members across the various business segments. The 'eNotice' system, the web-based interactive electronic system has enabled all Members and Associate Members to send the collateral related notices in electronic form and facilitates on-line tracking of acceptance/confirmation of such notices by CCIL. The Operations' department ensures optimal management of liquidity at CCIL for settlement purposes. As the in-house fund manager of the Company, the Department manages the investment of all INR/ USD cash collaterals/SGF contributions including Settlement Reserve Fund and Default Fund. CCIL has been a member of RTGS (Real Time Gross Settlement), which facilitates receipts and payments from RTGS settlement account and (Multilateral Net Settlement Batch) MNSB settlements through Core Banking Solution (CBS). One of the main functions is to ensure all rupee funds settlements across various segments of CCIL using the CBS provided by RBI. Further, management of Lines of Credit at Settlement Bank and RBI to take care of liquidity requirement is another important function. The Department also monitors defaults in INR and US Dollar settlements and follows up for replenishment with charges.

4. Product Development

Product Development Department (PDD) has been instrumental in introducing innovative trading platforms for the fixed income and money markets. Under the RBI NDS Hive-Off Initiative, PDD has developed the NDS-OM and NDS-CALL systems for RBI. NDS-OM is an anonymous order matching system for secondary market trading in government securities providing real-time trade information with STP linkages to CCIL's securities settlement system. NDS-CALL is a screen based negotiation system catering to the Call, Notice and Term Market.

As part of its own initiative for the money market, PDD has developed the CROMS system for dealing in market repos in government securities. It has also introduced a web based system 'e-Support' to provide electronic business support to Members for some of the major systems managed by Clearcorp NDS Operations (CNO). PDD developed the F-TRAC platform for FIMMDA as an integrated system for reporting of secondary market trades

in CD, CP, Corporate Bond and Corporate Bond Repo Segment. Currently secondary market transactions related to CP, CD and repos in corporate bonds and primary market transactions related to CPs and CDs are reported on the F-TRAC platform. As advised by RBI, this Platform is now being operated by CCIL as a Trade Repository regulated by RBI.

The Department has played a major role in the conceptualization, planning and development of the RBI Retail Direct Platform, based on the direction of RBI in its Monetary Policy Statement of February 2021.

For all the projects, PDD is involved in the management of the developmental activities throughout the entire cycle of the respective project(s) i.e. from conceiving, designing, firming up business requirements, engaging with software vendors for developing, user acceptance testing, roll out and implementation of the respective systems. Post launch, it oversees the hosting of the systems through CNO. Product enhancements and change management for the respective systems are also looked after by PDD.

5. Clearcorp NDS Operations

Clearcorp NDS Operations (CNO) has been set up to manage all operations pertaining to the hosting, maintenance and administration of the various systems developed and run by Clearcorp Dealing Systems (India) Ltd on behalf of RBI as well as its own systems. Presently under the RBI-NDS Hive Off arrangement, CNO manages operations pertaining to RBI's NDS-OM and NDS Call systems. CNO also manages its proprietary CROMS system and the F-TRAC platform. All the above systems hosted and maintained by CNO are conceived and developed by PDD. For providing operational assistance to Members of the various systems, CNO runs the 'e-Support' system. CNO is the interface to the Members and provides important feedback about Member expectations and functions of the various systems. CNO also supports PDD in the development and testing of various systems.

6. Information Technology

CCIL's business operations are backed by its Information Technology infrastructure. CCIL has built and manages three state-of-the-art data centres, two in Mumbai and one in Pune. All these data centres are built as per international Tier 3+ standard to support high redundancy and availability of computer resources. These data centres host critical IT infrastructure comprising of hardware, software, security/network equipment, communication links etc. CCIL has established its own backbone network connecting all the above mentioned locations/sites. CCIL is a member of the INFINET MPLS network. CCIL's members use INFINET to connect to the data centres for business operations. The in-house IT department performs the activities related to IT systems like project management, system/database/network administration, help-desk support, 24x7 data centre operations and business continuity management. A team of software development is also engaged in development and maintenance of software for various business requirements of CCIL. The Department has also been managing the software development activities outsourced to various skilled and experienced vendors.

The Department maintains various Policies and Procedures relating to the Information Security. Regular training/awareness are conducted for employees and onsite consultants on IS Security Policies/Procedures.

The Department has developed a Cyber Security framework/policy and Cyber Crisis Management Plan aligned with the guidelines on cyber security resilience from Committee on Payments and Market Infrastructures-International Organization of Securities Commissions (CPMI-IOSCO). In addition, CCIL has also chosen to align its cyber security measures to the circular on cyber security framework as issued by the RBI to banks.

All important technology decisions that have an impact on overall operations/IT are vetted by the Technical Approval Committee, a committee of the Board.

7. Economic Research

The Economic Research Department aims to act as the external interface to support market operations by leveraging the informational content available with CCIL due to its pivotal role in the Indian fixed income, forex and derivative markets. It releases data on a daily basis on the website of the company as well as to leading infovendors so that the market can be kept up-to-date with statistics pertaining to the government securities, money, derivatives and forex markets. Other than the syndicated research reports that CCIL churns out on a weekly and monthly and quarterly basis, it also caters to specific data requirements from its members and regulators. Daily, weekly, monthly, quarterly and annual reports tracking the various segments of the financial market and brief updates on macro-economic indicators are also released on the CCIL website. The extensive research publications released by the Department is currently available under the Knowledge Centre section of the CCIL website.

CCIL is the Calculation Agent for the FBIL Benchmarks and the Research Department computes the following benchmarks - Overnight MIBOR, Term MIBOR, MROR, FC-INR Options Volatility Matrix Rates, CD Curve, TB Curve, Forward Premia Curve, MIFOR Curve, MIBOR-OIS curve, Adjusted MIFOR and Modified MIFOR.

8. Support Services

Support service functions can be segregated into four sub-sections:

- a. **Finance and Accounts** : The Department maintains Accounts of the Company and looks after financial and taxation matters of the Company. It also ensures statutory compliance in respect of all relevant tax laws.

Secretarial, Compliance & Legal : The Secretarial and Compliance Department is the link between the Board of Directors and Shareholders. Its functions include ensuing compliance with the various corporate governance requirements laid down under the provisions of the Companies Act, 2013 and other applicable laws, rules and regulations, maintaining various Statutory Registers and monitoring and ensuring compliance of various Statutes applicable to the Company. The Department also coordinates implementation of Corporate Social Responsibility (CSR) activities of CCIL and its subsidiary companies. The Legal Department

delineates the legal boundaries and provides inputs and advisories in the course of achieving the Company's objectives. Broadly, the Department is involved in the drafting and review of the Company's Rules and Regulations for the Financial Markets it caters to. Further, it renders its advise to protect the legal rights, limit exposure and is tasked to handle the litigation and non-litigation legal affairs of the Company.

- c. **Human Resources Department** : Human Resources Development is another integral part of the Department that designs and implements various HR systems and policies in the areas of Manpower Planning, Recruitment, Placement, Performance Appraisal, Remuneration Package, Promotion and Career Planning and Development etc. It also ensures all statutory compliances with the relevant labour laws.
- d. **Administration** : General Administration function takes care of all utility services required for the smooth running of the company, including supervision of the maintenance of Premises of the Company etc.

Regulatory Interface

CCIL's policies and performance in the context of its role as central counterparty in clearing and settlement are assessed by the RBI. Various reports from all operational segments are sent periodically and exceptional reports immediately. All external/business matters concerning CCIL are subject to clearance by RBI prior to its implementation. Since CCIL is a corporate entity, it is also required to conform to the compliance requirements and standards laid out under the Companies Act, 2013.

User Groups

As part of the corporate governance policy, all key initiatives undertaken by CCIL in each of the segments are done in consultation with the major market participants of the respective segment. To this end, CCIL has set up various User Groups to receive feedback from the users for designing and for effecting improvements of its products and systems. This is a continuous process and regular meetings of user groups help in enhancing the effectiveness of CCIL's operations.

