

Historical Data Dissemination of Future and Options Segment

The derivatives trading on the exchange commenced with S&P CNX Nifty Index futures on June 12, 2000. The trading in index options commenced on June 4, 2001 and trading in options on individual securities commenced on July 2, 2001. Single stock futures were launched on November 9, 2001. From then till now NSE evolved into the largest market in Derivatives with a daily turnover of over Rs.30,000 crores.

This has led to a series of requests for historical data, for use in research and analysis amongst market participants, researchers, and policy makers. In response to these requests, NSE has setup a formal framework for historical data dissemination of the Future and Options segment of the Exchange.

Data Organization

When you mount the CD/DVD the starting directory is 200301. This name is in yyyy-mm format and indicates that the CD/DVD contains data pertaining to January 2003. Underneath this starting directory, there are 5 directories:

Bhavcopy

Masters

Snapshots

Trades

Circulars

Readme.htm

Data -CD - DISCLAIMER NOTICE.htm

When you go into this first level directory (which has a name like yyyy-mm), you will see these directories: Bhavcopy, Circulars, Masters, Snapshots and Trades. Inside these directories, you will find data files. All data files are plain ASCII files, which can be used on any computer in the world.

Bhavcopy Directory

The Bhavcopy directory contains a directory structure organized as 2003\Jan\date.gz, where the date is represented as yyyy-mm-dd.gz. Thus, the file for 3rd Jan, 2003 would be located at Bhavcopy\2003\Jan\20030103.gz. This directory structure is used to make it convenient for users to merge data across multiple CDs/DVDs (for multiple months) into one coherent file system on their hard disk.

This gives us one file for each trading day. The lines in this file have 16 fields per line (each line is one observation), delimited by the pipe "|" character. These fields are:

Date

This gives the Trade date.

Symbol

This gives the underlying index or stock.
e.g. NIFTY, ACC, etc.

Instrument

This gives the contract descriptor for the various instruments available in the derivatives segment.
e.g. FUTSTK, OPTIDX, etc.

Expiry date

The date on which the contract expires.

Option Type

This gives the type of option for the contract which is either call or put.
e.g. CE- Call European, PE- Put European, CA- Call American, PA- Put American

Corporate Action level.

This is the Corporate Action Flag. This flag changes when there is a corporate action on a contract, which could either be a symbol change or a dividend announced by the company.

Strike Price

This gives the Strike Price of the contract.

Opening price

This gives the price at which the contract opened for the day.

High price

This gives the highest price at which the contract was traded during the day.

Low price

This gives the lowest price at which the contract was traded during the day.

Closing price

This gives the price of the contract at the end of the day.

Last traded price

This gives the price of the contract on its last trade.

Open Interest

For futures contracts open interest is equivalent to the open positions in that futures contract multiplied by its last available closing price. For option contracts, open interest is equivalent to the open positions multiplied by the notional value. Notional value with respect to an option contract is computed as the product of the open position in that option contract multiplied by the last available closing price of the underlying.

Total Traded Quantity

This is the total no. of contracts on which business took place during the day.

Total Traded Value

The total money value of the business which took place on the contract during the day.

No. of Trades

The total no. of trades which took place on the instrument during the day.

Masters Directory

This directory contains all the contracts as on the month end including the contracts that expired on the last Thursday of the month. The Master applicable for January 2003 is found in the file 200301\Masters\2003\Jan\20030131.gz

The 12 fields in this file are:

Symbol

This gives the underlying index or stock.

e.g. NIFTY, ACC, etc

Instrument type

This gives the contract descriptor for the various instruments available in the derivatives segment.

e.g. FUTSTK, OPTIDX, etc.

Expiry Date

The date on which the contract expires.

Option Type

This gives the type of option for the contract which is either call or put.

e.g. CE- Call European, PE- Put European, CA- Call American, PA- Put American

Corporate Action Level

This is the Corporate Action Flag. This flag changes when there is a corporate action on a contract, which could either be a symbol change or a dividend announced by the company.

Strike Price

This gives the Strike Price of the contract.

Contract Regular Lot

This is the market lot of the contract available for trading.

Token Number

A unique number assigned to the contract by the system.

Issue Start Date

This indicates the date from which the contract is available for trading.

Issue Maturity Date

This indicates date on which the contract will mature.

Exercise Start Date (NULL in case of Futures.)

The date from which the contract can be exercised after introduction into the system.

Exercise End Date (NULL in case of Futures.)

The date till which the contract can be exercised after introduction into the system.

Snapshots Directory

NSE is a limit order book market, also known to economists as the 'Open Electronic Limit Order Book Market (OELOB)', or to practitioners as a market based on 'electronic order matching'. Liquidity on the OELOB market is embedded in the limit orders present at any point in time; these limit orders (the right to trade to trade against them, without any obligation) are free options which others can exploit.

Measurement of this liquidity is possible with high accuracy using "order book snapshots"- pictures of the complete limit order book at a point in

time. This is discrete, in only conveying the picture at a few time points in the day. However, at these time points, a variety of questions about liquidity can be accurately answered. The order book snapshot can yield the bid-ask spread, and it can be used to measure market impact cost for buying or selling any desired transaction (or for testing whether a desired transaction is feasible).

The order book snapshots for 3rd January, 2003 are stored in the directory 200301/Snapshots/20030103. The files that are found inside this have names of the form hhmmss.gz, to convey the time at which the snapshot was taken. For example, for 3rd January, 2003 the CD/DVD contains 110000.gz, 120000.gz, 130000.gz, 140000.gz., and 150000.gz. These are the order book snapshots at 11 am, 12 noon, 1 pm, 2 pm and 3 pm.

The 18 fields in this file are:

Order number.

As and when valid orders are entered or received by the system, they are first numbered, time stamped and then scanned for a potential match. This means that each order has a distinct order number.

Symbol

This gives the underlying index or stock.

e.g. NIFTY, ACC, etc

Instrument type.

This gives the contract descriptor for the various instruments available in the derivatives segment.

e.g. FUTSTK, OPTIDX, etc.

Expiry date

The date on which the contract expires.

Strike price

This gives the Strike Price of the contract.

Option type

This gives the type of option for the contract which is either call or put.

e.g. CE- Call European, PE- Put European, CA- Call American, PA- Put American

Corporate action level

This is the Corporate Action Flag. This flag changes when there is a corporate action on a contract, which could either be a symbol change or a dividend announced by the company.

Quantity

This gives the quantity remaining, i.e., if the order has been partly traded, the balance untraded quantity is indicated in this field.

Price

This is the limit price.

Time stamp

As and when valid orders are entered or received by the system, they are first numbered, time stamped and then scanned for a potential match. This means that each order has a unique time stamp on it.

Buy/Sell

It indicates whether the order placed is a buy order or a sell order.

B: stands for a buy order

S: stands for a sell order

Day flags.

These are called the day flags indicating whether it is a DAY order or GTD order or GTC order or FILL/KILL order, in this respective sequence. The flag is 'y' accordingly at the relevant place. For e.g. if this field shows 'nyyn', then it is a GTD order since the second place is 'y'.

Quantity flags.

This is a sequence of three flags in which the first flag indicates MF (min fill), second AON (all or none) and the third DQ (disclosed qty). Accordingly it will be 'y' or 'n'.

Price flags

This is again a sequence of three flags in which the first stands for ATO , the second for MKT, and the third for ONSTOP

Book type

The various book types that are used and their corresponding values are...

Book Type	Value entered by trading member through the front end
Regular Book	RL
Special Terms Book	ST
Stop Loss Book	SL
Negotiated Trade Book	NT
Odd Lot Book	OL
Spot Order Book	SP
Auction Order Book	AU

Minimum fill quantity

It denotes the minimum fill quantity.

Quantity disclosed

It denotes the disclosed quantity in case of a special terms order. For all orders where the disclosed quantity has not been specified it has a value zero.

Date for GTD

It denotes the date up to which the order should stay in the system. If the instrument is not GTD then this field is left blank.

Trades Directory

This directory contains details about every trade that took place. If NSE does 4,00,000 trades in a day, the dataset for that day would have 4,00,000 trades.

Information for the trades of each day is kept in a distinct file. The information for 3 January, 2003 is found in 200301\Trades\2003\Jan\20030103.gz.

The files are organized as follows:

Trade number

A number of each trade is given.

Symbol

This gives the underlying index or stock.

e.g. NIFTY, ACC, etc

Instrument type

This gives the contract descriptor for the various instruments available in the derivatives segment.

e.g. FUTSTK, OPTIDX, etc.

Expiry date

The date on which the contract expires.

Option type

This gives the type of option for the contract which is either call or put.

e.g. CE- Call European, PE- Put European, CA- Call American, PA- Put American

Corporate action level.

This is the Corporate Action Flag. This flag changes when there is a corporate action on a contract, which could either be a symbol change or a dividend announced by the company.

Strike price

This gives the Strike Price of the contract.

Trade time.

Time at which the trade took place. The format is hh:mm:ss.

Traded price

The price at which the contract was traded.

Traded quantity.

The number of contracts traded for the instrument in this trade.

Circulars Directory

Circulars are a formal method of communication between NSE and its member brokerage firms. This CD/DVD contains a comprehensive set of circulars issued in the month of January, 2003. Every development on the market in terms of market design is documented in these circulars.

All the circulars for January can be accessed by pointing your web browser to the file index.html. For example, the circulars for January,2003 can be read by loading up 200301/Circulars/2003/Jan/Index.html into your browser.