

GTP003 – Statistics Guide

GROUP TICKER PLANT

Issue E1.1 | 15 OCT 2021

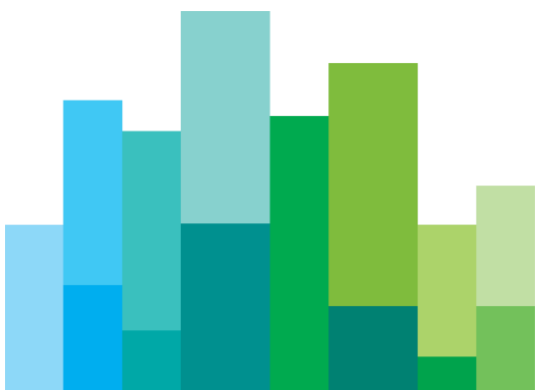


BORSA ITALIANA

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1. THIS GUIDE



1.1 Readership

The purpose of this document is to provide an overview of the statistics derived and published by the Group Ticker Plant.

This document is particularly relevant to trading, market data and technical teams within member firms, information vendors and other market participants who currently receive or are interested in receiving Borsa Italiana market data.

When read in conjunction with other Group Ticker Plant documents it is intended to provide all required information to develop to, and interact with, our real-time information systems.

1.2 Document Series

This guide, **GTP003 – Statistics Guide**, forms part of the documentation library supporting those clients interacting with the Group Ticker Plant. For information, the full series of currently available documentation is outlined below:

- GTP001 – Product Guide;
- GTP002 – Technical Guide (this document);
- GTP003 – Statistics Guide;
- GTP004 – Parameters Guide;
- GTP005 – Testing Guide;
- GTP006 – External Sources Guide;
- GTP007 – GTP Lite Guide.
- GTP008 – Market Attributes Guide

The full library of Group Ticker Plant documentation for Borsa Italiana can be found at:

Group Ticker Plant - Borsa Italiana

1.3 Document History

This document has been subject to the following iterations:

Issue	Date	Description
E1.0	5 October 2021	Document Rebrand
E1.1	15 October 2021	Updated market rebranding

In subsequent issues of this document, where amendments have been made, these changes will be indicated through the use of **red text**.

1.4 Enquiries

For further information on Group Ticker Plant, please contact either your Technical Account Manager or Client Technology Services (Italy):

- Telephone: (+39) 02 42 41 13 99
- Telephone (Toll Free): (00800) 26 77 20 00
- Email: **clients-services@borsaitaliana.it**

2. STATISTICS OVERVIEW



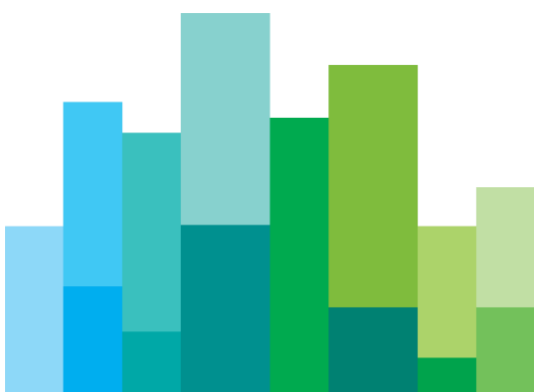
The Group Ticker Plant calculates a rich package of statistical information designed to educate customers on a security's behavior and facilitate interaction with the Group's markets through informed decision making. Whilst this document details the core logics employed to calculate the Group Ticker Plant statistics, the Group strongly advises clients to process statistical data as disseminated by the Group Ticker Plant - applying the information as delivered; this is of particular relevance for our customers redistributing Borsa Italiana data to third parties. When a customer redistributing data does implement their own method of calculation for a statistic it is advised that this is clearly identified as not originating from the Group Ticker Plant service lines.

Please note that whilst this document details the logics of how our statistics are derived from the underlying data, it does not describe best practice for the display of data as delivered by the Group Ticker Plant.

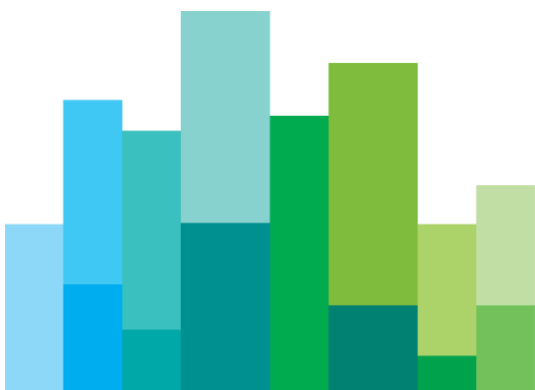
2.1 Statistics Delivery and Data Recovery

The Group Ticker Plant delivers statistics in two message types. In an effort to minimise the dissemination of redundant message fields, those statistics which update frequently as a result of an execution are contained within the Statistics message. In contrast, those statistics which update less frequently, such as Trade High and Low, are delivered to clients in the Statistics Update message. Further information is contained within GTP002 – Technical Guide.

The Group Ticker Plant statistics package is available for clients to recover during the trading day. Available via the recovery service, the Statistics Snapshot message contains the real-time statistics package and the last available auction information as calculated.



3. STATISTICS LOGICS



The Group Ticker Plant statistics package is derived from executions either on or off book. Customers should note that not all trades contribute to statistics – further information is contained within section 4 of this document.

3.1 Official Opening Price

- Group Ticker Plant will publish the Official Opening Price as reported by upstream markets
- For details relating to Borsa Italiana Markets, clients should refer to the Millennium Exchange Business Parameters <http://www.borsaitaliana.it/borsaitaliana/gestione-mercati/migrazionemillenniumit-mit/millenniumitmigration.en.htm>

3.2 Official Closing Price

- Group Ticker Plant will publish the Official Closing Price as reported by upstream markets
- For details relating to Borsa Italiana Markets, clients should refer to the Millennium Exchange Business Parameters <http://www.borsaitaliana.it/borsaitaliana/gestione-mercati/migrazionemillenniumit-mit/millenniumitmigration.en.htm>
- For further details relating to the derivation of Closing Prices on Borsa Italiana markets, clients should refer to BIT MIT 201 http://www.borsaitaliana.it/borsaitaliana/gestione-mercati/mit201-guidetonevtradingssystem-issue90.en_pdf.htm

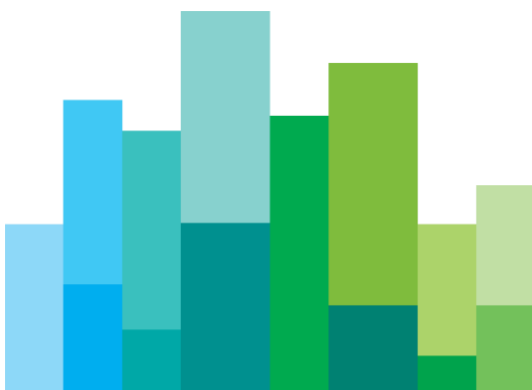
3.3 Best Closing Bid and Ask

- BBO is calculated using MBP order book reconstruction
- Section 4 details variances in derivation logic between different markets
- When the mid-price is used to derive the closing price, the Group Ticker Plant does not redistribute the contributing Bid or Offers used.
- No values are carried forward into the following day

3.4 Turnover

- On-book Turnover equates to the total value of order book trades executed on the Group's electronic order books. The value of an individual On Book trade is calculated as follows:

$$\text{Trade Value} = \text{Price} \times \text{Executed Size}$$



- On-Book trade cancellations are applied as a reversal to the statistic
- Bulk Trade Amendments contribute to statistic calculations
- For BIT (MTA Convertible Bonds and MOT) and ETLX bond instruments, pool Factor is

$$\text{Trade Value} = \frac{\text{Last Trade Price} * \text{Last Executed Size}}{100}$$

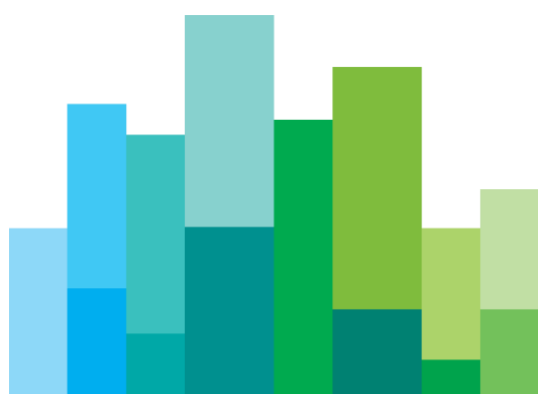
- Trades reported with a delayed publication to a date other than the traded date do not update statistics
- Statistics which are cancelled on T+n, are not included in any statistic calculation
- The statistic is reset at the end of each day.
- This statistic is not calculated for IDEM.

3.5 Number of Trades

- Core On-book GTP channels include only On Book statistics
- On-Book trade cancelations are applied as a reversal to the statistic
- Bulk Trade amendments update the statistic accordingly
- Under MiFID II, all Off Book Trades, except those reported with ESMA Flag CANC or DUPL contribute to the statistic
- Off Book Trades reported with ESMA Flag CANC are applied as a reversal to the statistic
- Trades reported with a delayed publication on a date other than the traded date do not update statistics
- Statistics which are cancelled on T+n, are not included in any statistic calculation
- The statistic is reset at the end of each day

3.6 Volume

- Core GTP channels include only On Book statistics
- On-Book trade cancelations are applied as a reversal to the statistic
- Bulk Trade amendments update the statistic accordingly
- Under MiFID II, all Off Book Trades, except those reported with ESMA Flag CANC or DUPL contribute to the statistic
- Off Book Trades reported with ESMA Flag CANC are applied as a reversal to the statistic
- Trades reported with a delayed publication on a date other than the traded date do not update statistics
- Statistics which are cancelled on T+n, are not included in any statistic calculation
- The statistic is reset at the end of each day



3.7 Volume Weighted Average Price (VWAP)

VWAP is calculated as follows:

$$VWAP = \frac{\sum(\text{Last Trade Price} * \text{Last Executed Size})}{\sum \text{Executed Trade Size}}$$

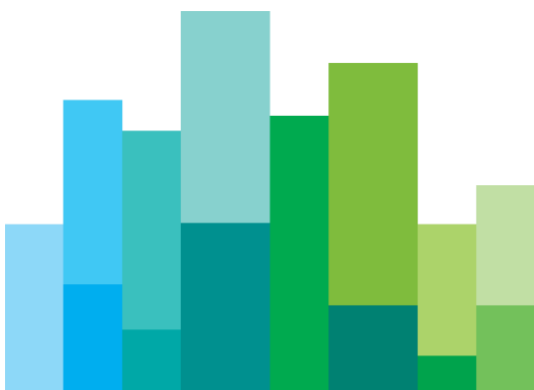
- On-Book trade cancellations are applied as a reversal to the statistic
- VWAP is derived based on On-Book only trades
- Bulk Trade Amendments update the statistics accordingly
- Trades reported with a delayed publication on a date other than the traded date do not update statistics
- Statistics which are cancelled on T+n, are not included in any statistic calculation
- The statistic is reset at the end of each day
- This statistic is not calculated for IDEM

3.8 Trade High/Trade High On-Book/Trade High Off Book

- On-Book trade cancellations are applied as a reversal to the statistic
- Core GTP channels include only On Book statistics
- Bulk Trade Amendments update the statistics accordingly
- Trades reported with a delayed publication on a date other than the traded date do not update statistics
- Statistics which are cancelled on T+n, are not included in any statistic calculation
- The statistic is reset at the end of each day

3.9 Trade Low/Trade Low On-Book/Trade Low Off Book

- On-Book trade cancellations are applied as a reversal to the statistic
- Core GTP channels include only On Book statistics
- Bulk Trade Amendments update the statistics accordingly
- Trades reported with a delayed publication on a date other than the traded date do not update statistics
- Statistics which are cancelled on T+n, are not included in any statistic calculation
- The statistic is reset at the end of each day



3.10 52-week Trade High and Low

- This price may be updated within a trading day
- On-Book trade cancellations are applied as a reversal to the statistic
- Core GTP channels include only On-Book trades in the derivation of statistic
- Bulk Trade Amendments update the statistics accordingly
- Trades reported with a delayed publication on a date other than the traded date do not update statistics
- Trades which are cancelled on T+n, are not included in any statistic calculation
- The statistic value is carried forward to the next day

3.11 Open Interest

- Open interest is applicable only to IDEM
- The value is re-published as reported by upstream systems
- The latest value calculated on the trading venue will be carried forward into the next trading day.

3.12 Volatility

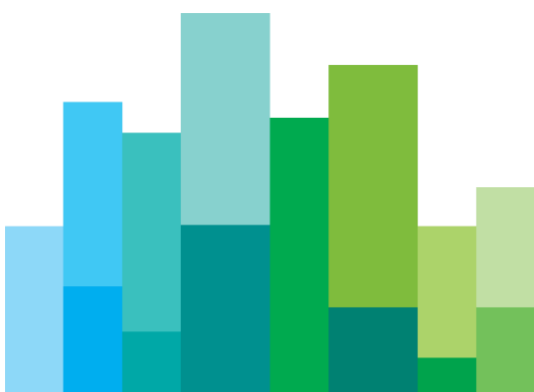
- Volatility is applicable only to IDEM
- Volatility is re-published as received from upstream exchange
- The value is not carried forward into the next trading day

3.13 Indicative Auction Information

- Values are re-published from exchange
- The values may be published multiple times per day
- Indicative Auction Price, Paired Quantity, Auction Type, Imbalance Direction and Imbalance Size values are disseminated
- Values are not carried forward into the next trading day

3.14 Last Traded

The Statistics Snapshot message, available via the Recovery service, will be enhanced to support the inclusion of three additional new fields. Used to disseminate the last trade time, quantity and price for a security, these fields will included on-book executions only (including Automatic, Uncrossing and Cross trades) in their derivation.



4. ADDITIONAL INFORMATION



4.1 Borsa Italiana Best Closing Bid and Ask

Trading Model	Derivation Logic
EURONEXT MILAN (MTA)	Immediately prior to Closing Auction Call;
EURONEXT GROWTH MARKET (EGM)	Immediately prior to Closing Auction Call;
ETFPlus	Immediately prior to Closing Auction Call;
SeDex	Immediately prior to Market Close;
MOT	Immediately prior to Closing Auction Call;
TAH	Immediately prior to Market Close.

4.2 Borsa Italiana (IDEM) Best Closing Bid and Ask

Trading Model	Derivation Logic
IDEM	Immediately prior to Market Close

4.3 EuroTLX Best Closing Bid and Ask

Trading Model	Derivation Logic
All	Immediately prior to Market Close

4.4 Applicable Trade Types (Statistics Message)

	Trade /Cross Type	Description	On-Book Only				Off-Book & On-Book			
			Volume	VWAP	Number Of Trades	Turnover	Volume	VWAP	Number Of Trades	Turnover
Trade Message	0	Regular Trade	✓	✓	✓	✓	✓	✓	✓	✓
	1	Auction Trade - Bulk	✓	✓	✓	✓	✓	✓	✓	✓
	2	Auction Trade - Indiv.								
	5	Late Trade (IDEM)	✓	✓	✓	✓	✓	✓	✓	✓
	10	Strategy Vs Strategy (Idem)	✓	✓	✓	✓	✓	✓	✓	✓
	22	Private RFQ					✓	✓	✓	✓
	25	Cross CPI Trade (IDEM)	✓		✓		✓		✓	
	26	CPI Trade (IDEM)	✓		✓		✓		✓	
Trade Cross	5	Internal Cross	✓		✓	✓	✓	✓	✓	✓
	6	Internal BTF	✓		✓	✓	✓	✓	✓	✓
	7	Committed Cross	✓		✓	✓	✓	✓	✓	✓
	8	Committed BTF	✓		✓	✓	✓	✓	✓	✓
	9	EG1 (Idem)	✓		✓	✓	✓	✓	✓	✓
	10	EG2 (Idem)	✓		✓	✓	✓	✓	✓	✓

- Off-Book Trades with Trade Date other than that of the current trading day will not update our statistics package.

4.5 Applicable Trade Types (Statistics Update Message)

	Trade /Cross Type	Description	On-Book Only	Off-Book	All Trades
			Trade High / Low	Trade High / Low	Trade High / Low
Trade Message	0	Regular Trade	✓		✓
	1	Auction Trade - Bulk	✓		✓
	2	Auction Trade - Indiv.			
	5	Late Trade (Idem)	✓		✓
	10	Strategy Vs Strategy (Idem)	✓		✓
	22	Private RFQ		✓	✓
	25	Cross CPI Trade	✓		✓
	26	CPI Trade			✓
Trade Cross	5	Internal Cross			✓
	6	Internal BTF			✓
	7	Committed Cross			✓
	8	Committed BTF			✓
	9	EG1 (Idem)			✓
	10	EG2 (Idem)			✓

- Off-Book Trades with Trade Date other than that of the current trading day will not update our statistics package.

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