Autobahn

Equity Pre-Trade Analytics Tool
User guide v1.0

Autobahn

Autobahn is Deutsche Bank's award-winning electronic distribution service.

Since 1996, Autobahn has been connecting clients to Deutsche Bank's innovative Capital Markets products and insights. Having started life primarily as an execution tool, Autobahn now provides electronic access to services harnessing our Sales, Trading and Research expertise and, ultimately creates an integrated experience with our voice services.

Autobahn is a simple, intuitive and consistent way for you to:

– Gain unparalleled access to Markets and Liquidity

– Electronically trade quickly and easily

– Intuitively access Deutsche Bank's powerful analytics and published content

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http://autobahn.db.com

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Introduction

Autobahn Equity Pre-Trade Analytics Tool has been designed to offer a rapid overview of pre-trade positions for baskets, algorithmic trading, charting and an interactive tool to allow you to optimize your portfolios.

This User Guide describes the application basics, the platform layout and manipulating the platform. It is divided into the following sections;

–   Autobahn Equity Pre-Trade Analytics Tool Basics (see below)

–   Pre-Trade Basic Functioning (see page 5)

–   My Reports (see page 10)

–   My Portfolios (see page 11)

Autobahn Equity Pre-Trade Analytics Tool Basics

Autobahn is Deutsche Bank Global Market's electronic Decision Support service. The platform provides a consistent window onto key DB intellectual capital across all asset classes around the globe.

Autobahn Equity Pre-Trade Analytics Tool sources the pre-trade data from Deutsche Bank's proprietary analytics engine. The data in the system is refreshed on a daily basis to T-1 accuracy. This includes RIC, Sedol, BBG and any new issue changes.

Autobahn Equity Pre-Trade Analytics Tool can be used to classify basket constituents into different data components. The data available to classify each basket constituent is as follows:

–   Capitalisation – stocks grouped by their market capital size

–   Exchange – groups the stocks according to their primary listing exchange

–   Sector – groups the stocks according to the industry sector (see appendix for sector breakdown)

–   Security Type – groups by security type

–   Side – groups stocks according to their side

The market data available in the system is as follows:

–   Closing Prices (T-1)

–   Spreads (Averaged)

–   Closing Volumes (T-1)

The benchmark default is as follows:

–   US: S&P500 vs Dollar

All times in the system are in GMT (both input and output).

Instrument Identifiers

Instruments are added to the application via the importation of portfolios. When creating portfolios, you can use the following identifier codes:

–   Sedol:

Seven character alpha numeric strings. When supplied with less than seven characters in length, the missing characters are assumed to be leading zeros (e.g. original leading zeros may be lost through Excel's truncation on none "text" formatted numeric cells, i.e. 459497 assumed to be 0459497)

–   RIC:

The standard Reuters instrument code. These include a prefix to identify the company, followed by a dot separated postfix that indicates the trading exchange

–   Bloomberg:

The standard Bloomberg instrument code. These include a prefix to identify the company, followed by a space separated postfix that indicates the trading exchange

Introduction Continued

Market Data Basics

The market data in Autobahn Equity Pre-Trade Analytics Tool is based on the following principles and sources:

– All traded volume data or liquidity calculations are provided from composite closing volumes historically adjusted for stock splits

– All prices are provided in major currency units, i.e. always pounds not pence

– Default liquidity calculations are derived from the past 30 trading days' closing volumes

– Default values for historical volatility of a stock are derived from the past 60 trading days' closing prices

– No live prices are provided through the system. The most recent prices are the previous night's closing prices. The same applies to traded share volumes

– Spread data is averaged from past market observations

– Market data history is provided by Deutsche Bank historic databases

Autobahn Equity Pre-Trade Analytics Basics

Autobahn Equity Pre-Trade Analytics Tool calculates analysis models on the following principles:

– The risk model is based on an historic covariance matrix constructed from the previous 60 working days' closing prices

– Default liquidity figures are derived from the previous 30 working days' closing volumes

– No actual closing volume history is available in the system (other than averages)

– All volatility and VAR calculations are provided on a daily basis

– Values derived as standard deviation are always represented as one standard deviation

– Sell quantities are represented as negative, hence, the representative values for these shares are also negative

– Tracking values are considered the difference between two sets of assets weighted returns, rather than the weighted difference in their weighted returns

– Liquidity ranges are provided as 0-1%, 1-2.5%, 2.5-5%, 5-10%, 10-15%, 15-20%, 20-25%, 25-30%, 30-50%, 50-100%, 100-200%, Over 200%

– Any number representing the increase or decrease relative to another number is presented as a percentage, i.e. 1% will be provided as 0.01 (rather than multiplied by 100 to provide as a whole number or 10,000 for basis points)

Sector Classifications

Autobahn Equity Pre-Trade Analytics Tool uses GICS sector codes. There are 10 different sector codes.
See the appendices for a full listing of each sector type

Pre-Trade Basic Functioning

This section of the User Guide covers the following features and functions:

– Accessing the Autobahn Equity Pre-Trade Analytics Tool (see below)

– Platform Layout (see below)

– Displaying Data (see page 6)

– Uploading Portfolios (see page 7)

– Filters (see page 8)

– Reports (see page 9)

Accessing the Autobahn Pre-Trade Analytics Tool

– Type http://autobahn.db.com/equity into your web browser

– Enter your username (email address) and password

– Select the Pre-Trade icon within the Equity Tools page

Platform Layout

Autobahn Equity Pre-Trade Analytics Tool displays the information in a clearly defined web-based layout, with the data presented in different components.

There are two different components:

– Pre-Trade Analytics

– Pre-Trade Charts

These components have been organised in a selection of pre-configured sections, with defined links and formats, such as data by details, sector breakdown, or capitalization breakdown.

Along the left-hand side of the platform are a series of Actions panels which allow you to Upload your portfolios, apply Filters and run Reports. In a subsequent release, functionality will be provided to allow you to configure and save your own Workspace.

Displaying Data

To change the data displayed in a component, click on the column selector icon to display the configuration options. Add or remove the settings by clicking in the relevant check boxes. To close the column selector, click on the row header for that component.
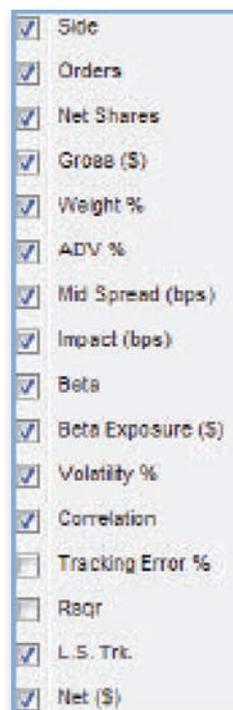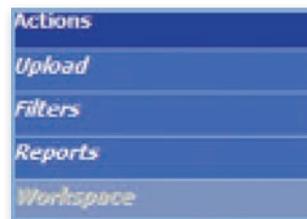
Pre-Trade Basic Functioning Continued

Moving Columns

You can re-arrange the order of the columns within a component by clicking on a column title, drag it to a new position in the table and then release it. To guide you, a green tick or a stop sign will be displayed to either confirm or reject the alignment of the column.
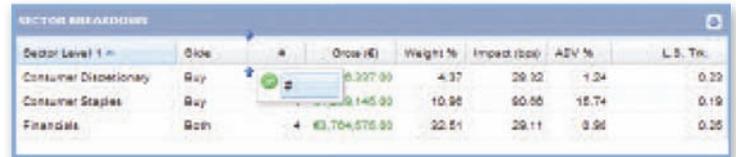
Note: To obtain a description of a column, place your cursor on the column header.

Sorting Data

You can sort the data displayed in a column by clicking on a column header. The data can then be sorted in either ascending or descending order.

Data Persistence

Any changes to the column layout remain persistent even if you upload another portfolio. Portfolios are not persisted unless they are loaded using the My Portfolio feature.

Uploading Portfolios

All instrument data that is displayed in the components is based on the instruments and quantities that you add to the platform by importing the portfolio. After performing calculations and filtering the data, you can then also download a BidSheet of the portfolio .

Importing Portfolios

To import or create a new portfolio of stocks:

1. Select the Upload panel (under Actions).

2. Choose the upload method from a CSV file, copy and paste, or a saved portfolio.

3. Enter the stock details, either by copying and pasting from an Excel spreadsheet, or by typing the details directly into the dialog box.

4. Select a format for the data in the Upload Templates. The possible choices are the following:

   – Default – will attempt to apply the most suitable template to the file, most appropriate option in most cases

   – Instrument, Holding

   – Holding, Instrument

   – Instrument, Holding, Side

   – Side, Instrument, Holding

Pre-Trade Basic Functioning Continued

Importing Portfolios Continued

– Holding, Instrument, Side

– Instrument, Side, Holding

– Side, Holding, Instrument

– Holding, Side, Instrument

Note: Whilst entering the details directly, the data must be separated by a coma (,), this does not apply when copying from Excel

5. Select your required Input Parameters, i.e. Currency and Benchmark.

Note: At present, only the Currency and Benchmark parameters are active. In a future release, you will have the option to select the Time Period and also the Chart Period

6. Choose to Replace (default) or Append any additional stocks (if you wish to include the previously uploaded basket of stocks in the analysis).

7. Press Upload.

A suggestions window appears if you enter an instrument code which the system does not recognise, is not part of the stock universe (see Figure A) or, there is an issue with the quantity.

Where you have elected to ignore a suggestion, the associated tickers that were not loaded will be displayed (see Figure B).

Filters

Applying Filters:

– Once you have run your portfolio, you can apply filters to any of the data components

– If you click on an individual row, the system will apply this filter and reload the information in all of the components

– Alternatively, to select a number of entries, for example, multiple stocks, hold down the CTRL key and click on each row. Further, in the Details component, you may also elect to Exclude stocks from the calculations

– Filters can also be applied using the graphs by clicking once onto a graph segment

Removing Filters:

– To remove any filters that you have applied, expand the Filter panel using the ⊞ icon. Either select the applicable wastepaper basket icon ▥ or press Clear to remove all of the items selected

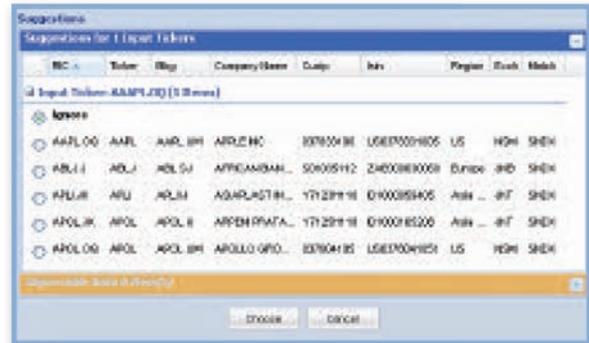– Any filter applied using a graph can also be removed by clicking on the graph for a second time
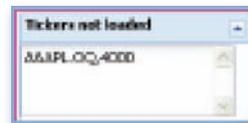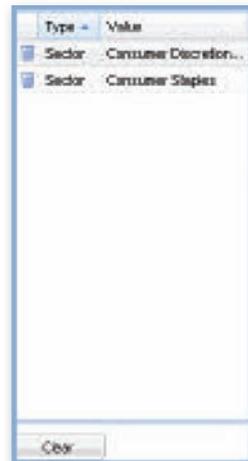

Figure A

Figure B

Pre-Trade Basic Functioning Continued

Reports

The Reports panel provides you with a link to Download a PDF version of the blind BidSheet.

During the process of downloading the report to PDF, the following occurs:

– Any specific references to stocks identifiers are removed

– Any specific references to side are removed and replaced with Side A or Side B. This varies randomly from one report to another, meaning that buys are not always Side A and vice versa
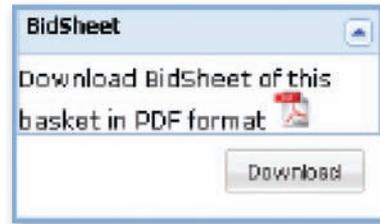
The downloaded report will provide a full breakdown of the currently open portfolio.

Note: Any stocks excluded or filters applied will also be reflected in the BidSheet

The report is divided into the following sections:

– Order Summary

– Trade Summary

– Risk Summary

– Country Breakdown

– Index Breakdown

– Sector Breakdown

– Liquidity Ranges

– Market Cap Ranges

– Largest Positions by Side

– Least Liquid Positions by

Note: In the future, the option to export the BidSheet to Excel will be activated. In addition you will be able to send the BidSheet directly to the trading desk

My Reports

My Reports contains details of your Autobahn Equity Pre-Trade Analytics Tool generated reports.

Accessing My Reports

To access the My Reports page, select the link from the Equity Tools homepage.

The page displays a list of reports which are usually shown as completed, but for longer running tools it is possible for the report to be marked as In Progress.

Reviewing your Reports

The My Reports page contains the following fields:

– Status (visual icon)

– Date the report was created

– Type – refers to which tool the report was created in

– Title

– Run Time

– Status Message

Deleting a Report

To delete a report, firstly find the item in the My Reports page. Once found, place your cursor in the first column. The wastepaper basket ▣ icon should appear – click on it to delete the selected report.

Note: Select the View Legend button to see a description of the different status types

My Portfolios

My Portfolios enables you to save your own portfolios for use amongst the Autobahn Equity Pre-Trade Analytics Tool tools and pages.

The tool allows you to create, edit and delete portfolios.

Creating a Portfolio

To create a Portfolio:

1. Select the My Portfolio link from the Equity Tools page. Alternatively, in the Upload Panel, select the Edit My Portfolios ⚙ icon

2. Click the Add Basket 🗃 icon

3. Complete the Create basket screen, including your input method and Template

4. Press Create
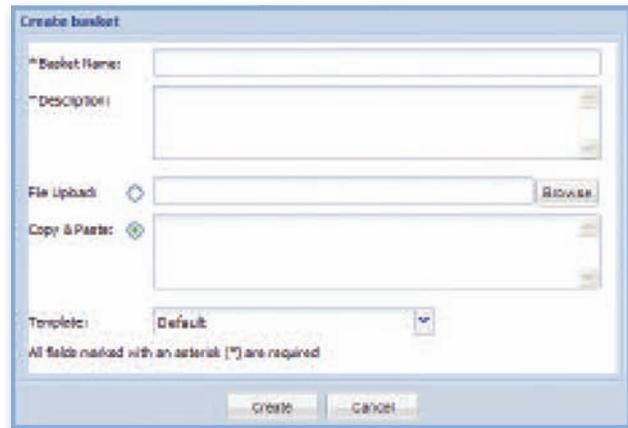
Editing a Portfolio

1. Click on the row of the portfolio

2. In the details window, use the appropriate icons to Add, Delete or Upload further securities

3. Use the Search feature in the Details screen to find a stock listed within that portfolio
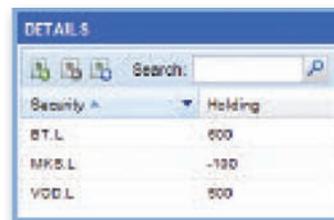
Deleting a Portfolio

1. Select the row for the corresponding portfolio

2. Click the Delete basket 🗃 icon

3. Press Yes to confirm the deletion

Once you have stored your portfolio(s), you can access them in the Upload a saved Portfolio section of the Pre-Trade Upload panel.

Appendix A – Countries

Code	Country	Calc Index
AE	U.A.E.	
AN	Antilles	
AR	Argentina	.SPX
AT	Austria	.ATX
AU	Australia	.AXJO
BB	Barbados	
BE	Belgium	.BFX
BG	Bulgaria	
BH	Bahrain	
BM	Bermuda	
BR	Brazil	.BVSP
BS	Bahamas	
BW	Botswana	
BZ	Belize	
CA	Canada	.TSE60
CH	Switzerland	.SSMI
CI	Ivory Coast	
CL	Chile	.SPX
CN	China	
CO	Colombia	.SPX
CR	Costa Rica	
CY	Cyprus	
CZ	Czech Republic	
DE	Germany	.GDAXI
DK	Denmark	.OMXC20
DO	Dominican Republic	
EC	Ecuador	
EE	Estonia	
EG	Egypt	
EH	Western Sahara	
ES	Spain	.IBEX
FI	Finland	.OMXH25
FR	France	.FCHI
GB	UK	.FTSE
GG	Guernsey	
GH	Ghana	
GR	Greece	.ATG
HK	Hong Kong	.HSI
HR	Croatia	
HU	Hungary	
ID	Indonesia	.JKSE
IE	Ireland	.FTSE
IL	Israel	
IM	Isle of Man	
IN	India	.BSE100
IS	Iceland	
IT	Italy	.SPMIB
JE	Jersey	
JO	Jordan	
JP	Japan	.TOPX
KE	Kenya	
KR	Korea	.KS200
KW	Kuwait	

Code	Country	Calc Index
KY	Cayman Island	
KZ	Kazakhstan	
LB	Lebanon	
LI	Liechtenstein	
LK	Sri Lanka	
LR	Liberia	
LT	Lithuania	
LU	Luxembourg	.GDAXI
LV	Latvia	
MA	Morocco	
MT	Malta	
MU	Mauritius	
MW	Malawi	
MX	Mexico	.SPX
MY	Malaysia	
NA	Namibia	
NE	Niger	
NL	Netherlands	.AEX
NO	Norway	.OBX
NZ	New Zealand	
OM	Oman	
PA	Panama	
PE	Peru	
PG	Papua New Guinea	
PH	Philippines	.PSAL
PK	Pakistan	
PL	Poland	
PR	Puerto Rico	
PT	Portugal	.PSI20
QA	Qatar	
RO	Romania	
RU	Russia	
SE	Sweden	.OMXS30
SG	Singapore	.STI
SI	Slovenia	
SK	Slovak Republic	
SN	Senegal	
SNAT	Supranational	
SZ	Swaziland	
TC	Turks & Caicos Islands	
TH	Thailand	
TN	Tunisia	
TR	Turkey	
TW	Taiwan	.TWII
UA	Ukraine	
US	US	.SPX
VE	Venezuela	.SPX
VG	UK Virgin Islands	
VI	US Virgin Islands	
ZA	South Africa	.JTOPI
ZM	Zambia	
ZW	Zimbabwe	

Appendix B – Indices

Europe

Name	RIC Code	Name	RIC Code
AEX	.AEX	MDAX	.MDAXI
ASX50	.AFLI	MIB30	.MIB30
AORD	.AORD	MSCIWORLD	.MSCIWO
ATG	.ATG	MS_EURO	.MSER
ATX	.ATX	PAN_EURO	.MSPE
ASX200	.AXJO	MSCI_TAI	.MSTW
BEL20	.BFX	NIKKEI225	.N225
BSE100	.BSE100	NASDAQ	.NDX
BOVESPA	.BVSP	NEMAX50	.NEMAX50K
MSCI_LATIN_AMERICA	.dMILA00000PUS	OBX	.OBX
MSCI_ASIA_EX_JAPAN	.dMISX00000PUS	OCBC30	.OCBC
CAC40	.FCHI	KFX	.OMXC20
FTSEALL	.FTAS	HEX25	.OMXH25
ETOP100	.FTEU1	OMX	.OMXS30
ETOP300	.FTEU3	PSEALL	.PSAL
FTSE350	.FTLC	PSI20	.PSI20
FTSE250	.FTMC	RUT-R2000	.RUT
FTSE100	.FTSE	S&P500	.SPX
FTSE CAN	.FWCA	SMI	.SSMI
DAX30	.GDAXI	STRAITS	.STI
HANGSENG	.HSI	STOXX50	.STOXX50
IBEX35	.IBEX	STOXX50E	.STOXX50E
ISEQ	.ISEQ	DJ_RETAIL-E	.SX1E
JALS -OLD	.JALS	DJ_RETAIL	.SX1P
JSE-IND25	.JINDI	DJ_CYCLICAL-E	.SX2E
JKSE	.JKSE	DJ_CYCLICAL	.SX2P
JTOPI	.JTOPI	DJ_FOOD-E	.SX3E
KOSPI200	.KS200	DJ_FOOD	.SX3P
FTSE350 Aerospace Defence	.LCAD	DJ_CHEMICAL-E	.SX4E
FTSE350 Automobiles Parts	.LCAM	DJ_CHEMICAL	.SX4P
FTSE350 Banks	.LCBK	DJ_UTILITIES-E	.SX6E
FTSE350 Construction	.LCBM	DJ_UTILITIES	.SX6P
FTSE350 Chemicals	.LCCH	DJ_BANK-E	.SX7E
FTSE350 Software Computer Services	.LCCS	DJ_BANK	.SX7P
FTSE350 Beverages	.LCDN	DJ_TECHNOLOGY-E	.SX8E
FTSE350 Electronics	.LCEE	DJ_TECHNOLOGY	.SX8P
FTSE350 Mining	.LCEI	DJ_AUTO-E	.SXAE
FTSE350 Engineering	.LCEN	DJ_AUTO	.SXAP
FTSE350 Electricity	.LCEY	DJ_HEALTH-E	.SXDE
FTSE350 Food Producers Processors	.LCFM	DJ_HEALTH	.SXDP
FTSE350 Forestry Paper	.LCFP	DJ_ENERGY-E	.SXEE
FTSE350 Food Drug Retailers	.LCFR	DJ_ENERGY	.SXEP
FTSE350 Household Goods Textiles	.LCHG	DJ_FINANCIAL-E	.SXFE
FTSE350 Leisure Hotels	.LCHL	DJ_FINANCIAL	.SXFP

Appendix B – Indices Continued

Europe Continued

Name	RIC Code
FTSE350 Insurance	.LCIC
FTSE350 Life Assurance	.LCIL
FTSE350 Health	.LCMA
FTSE350 Media Entertainment	.LCMD
FTSE350 Speciality Other Finance	.LCOF
FTSE350 Oil Gas	.LCOI
FTSE350 Personal Care Household Products	.LCPC
FTSE350 Pharmaceutical Biotechnology	.LCPH
FTSE350 Real Estate	.LCPY
FTSE350 General Retailers	.LCRM
FTSE350 Steel Other Metals	.LCSM
FTSE350 Support Services	.LCSS
FTSE350 Tobacco	.LCTB
FTSE350 IT Hardware	.LCTH
FTSE350 Telecommunications	.LCTN
FTSE350 Transport	.LCTR
FTSE350 Investment Companies	.LCTU
FTSE350 Utilities Others	.LCUO

Name	RIC Code
DJ_NON_CYCLIC-E	.SXHE
DJ_NON_CYCLIC	.SXHP
DJ_INSURANCE-E	.SXIE
DJ_INSURANCE	.SXIP
DJ_TELECOMS-E	.SXKE
DJ_TELECOMS	.SXKP
DJ_MEDIA-E	.SXME
DJ_MEDIA	.SXMP
DJ_INDUSTRIAL-E	.SXNE
DJ_INDUSTRIAL	.SXNP
DJ_CONSTRUCT-E	.SXOE
DJ_CONSTRUCT	.SXOP
DJ_BASIC_RES-E	.SXPE
DJ_BASIC_RES	.SXPP
TSE100	.TSE100
TSE60	.TSE60
TWII	.TWII

Asia

Name
1320.OS
1321.OS
FTSE_JAPAN
JRN
MSCI_JAPAN
NIKKEI225
NIKKEI300
SP500
TOPIX100
TOPIX500
TOPIXLarge
TOPIXMid
TOPIXSP
TOPIXSmall
TOPIX_AIR_TRANSPORT
TOPIX_BANKS
TOPIX_CHEMICALS
TOPIX_COMMUNICATION
TOPIX_CONSTRUCTION
TOPIX_ELECTRONIC_APPS
TOPIX_FIN_BUSINESS
TOPIX_FISH_AGRIC
TOPIX_FOODS
TOPIX_GAS
TOPIX_GLASS_CERAMICS

Name
TOPIX_INSURANCE
TOPIX_IRON_STEEL
TOPIX_LAND_TRANSPORT
TOPIX_MACHINERY
TOPIX_MARINE_TRANSPORT
TOPIX_METAL_PRODUCTS
TOPIX_MINING
TOPIX_NONFERROUS_METLS
TOPIX_OIL_COAL_PRODS
TOPIX_OTHER_PRODUCTS
TOPIX_PHARMACEUTICAL
TOPIX_PRECISION_INSTS
TOPIX_PULP_PAPER
TOPIX_REAL_ESTATE
TOPIX_RETAILS_TRADE
TOPIX_RUBBER_PRODUCTS
TOPIX_SECURITIES
TOPIX_SERVICES
TOPIX_TEXTILES
TOPIX_TRANSPORTATION
TOPIX_WAREHOUSING
TOPIX_WHOLESALE_TRADE
TOPX
TOPXC
TOPXDV

Appendix B – Indices Continued

US

Name	RIC Code	Name	RIC Code
FTSE100	.FTSE	DJ_FOOD-E	.SX3E
FTSE250	.FTMC	DJ_HEALTH	.SXDP
FTSE350	.FTLC	DJ_HEALTH-E	.SXDE
DAX30	.GDAXI	DJ_INDUSTRIAL	.SXNP
CAC40	.FCHI	DJ_INDUSTRIAL-E	.SXNE
MIB30	.MIB30	DJ_INSURANCE	.SXIP
IBEX35	.IBEX	DJ_INSURANCE-E	.SXIE
SMI	.SSMI	DJ_MEDIA	.SXMP
AEX	.AEX	DJ_MEDIA-E	.SXME
BEL20	.BFX	DJ_NON_CYCLIC	.SXHP
OMX	.OMX	DJ_NON_CYCLIC-E	.SXHE
OBX	.OBX	DJ_RETAIL	.SX1P
KFX	.KFX	DJ_RETAIL-E	.SX1E
HEX25	.HEX25	DJ_TECHNOLOGY	.SX8P
ATX	.ATX	DJ_TECHNOLOGY-E	.SX8E
ATG	.ATG	DJ_TELECOMS	.SXKP
PSI20	.PSI20	DJ_TELECOMS-E	.SXKE
MDAX	.MDAXI	DJ_UTILITIES	.SX6P
FTSEALL	.FTAS	DJ_UTILITIES-E	.SX6E
STOXX50E	.STOXX50E	FTSE350 Mining	.LCEI
STOXX50	.STOXX50	FTSE350 Oil Gas	.LCOI
ETOP100	.FTEU1	FTSE350 Chemical	.LCCH
ETOP300	.FTEU3	FTSE350 Construction	.LCBM
SP500	.SPX	FTSE350 Forestry paper	.LCFP
NASDAQ	.NDX	FTSE350 Steel other metals	.LCSM
NIKKEI225	.N225	FTSE350 Aerospace Defence	.LCAD
NEMAX50	.NEMAX50K	FTSE350 Electronics	.LCEE
JTOPI	.JTOPI	FTSE350 Engineering	.LCEN
ASX200	.AXJO	FTSE350 Automobiles Parts	.LCAM
JALS -OLD	.JALS	FTSE350 Household Goods Textiles	.LCHG
JSE-IND25	.JINDI	FTSE350 Beverages	.LCDN
TSE100	.TSE100	FTSE350 Food Producers Processors	.LCFM
TSE60	.TSE60	FTSE350 Health	.LCMA
FTSE CAN	.FWCA	FTSE350 Personal Care Household Products	.LCPC
HANGSENG	.HSI	FTSE350 Pharmaceutical Biotechnology	.LCPH
BOVESPA	.BVSP	FTSE350 Tobacco	.LCTB
AORD	.AORD	FTSE350 General Retailers	.LCRM
OCBC30	.OCBC	FTSE350 Leisure Hotels	.LCHL
STRAITS	.STI	FTSE350 Media Entertainment	.LCMD
PAN_EURO	.MSPE	FTSE350 Support Services	.LCSS
MS_EURO	.MSER	FTSE350 Transport	.LCTR
MSCI_ASIA_EX_JAPAN	.dMISX00000PUS	FTSE350 Food Drug Retailers	.LCFR
MSCI_TAI	.MSTW	FTSE350 Telecommunications	.LCTN
MSCI_LATIN_AMERICA	.dMILA00000PUS	FTSE350 Electricity	.LCEY

Appendix B – Indices Continued

US Continued

Name	RIC Code
MSCIWORLD	.MSCIWO
KOSPI200	.KS200
TWII	.TWII
BSE100	.BSE100
PSEALL	.PSAL
JKSE	.JKSE
ASX50	.AFLI
ISEQ	.ISEQ
DJ_AUTO	.SXAP
DJ_AUTO-E	.SXAE
DJ_BANK	.SX7P
DJ_BANK-E	.SX7E
DJ_BASIC_RES	.SXPP
DJ_BASIC_RES-E	.SXPE
DJ_CHEMICAL	.SX4P
DJ_CHEMICAL-E	.SX4E
DJ_CONSTRUCT	.SXOP
DJ_CONSTRUCT-E	.SXOE
DJ_CYCLICAL	.SX2P
DJ_CYCLICAL-E	.SX2E
DJ_ENERGY	.SXEP
DJ_ENERGY-E	.SXEE
DJ_FINANCIAL	.SXFP
DJ_FINANCIAL-E	.SXFE
DJ_FOOD	.SX3P

Name	RIC Code
FTSE350 Utilities Others	.LCUO
FTSE350 Banks	.LCBK
FTSE350 Insurance	.LCIC
FTSE350 Life Assurance	.LCIL
FTSE350 Investment Companies	.LCTU
FTSE350 Real Estate	.LCPY
FTSE350 Speciality Other Finance	.LCOF
FTSE350 IT Hardware	.LCTH
FTSE350 Software Computer Services	.LCCS
DOW30	.DJI
MIDCAP400	.MID
RUSS1000	.RUI
RUSS1000 Growth	.RLG
RUSS1000 Value	.RLV
RUSSMIDCAP	.RMC
RUSSMIDCAP Value	.RMV
RUSSMIDCAP Growth	.RDG
RUSS2000	.RUT
RUSS2000 Value	.RUJ
RUSS2000 Growth	.RUO
RUSS3000	.RUA
RUSS3000 Growth	.RAG
RUSS3000 Value	.RAV
SP600	.SML
MS Cyclical	.CYC
MS Consumer	.CMR
SP100	.OEX

Appendix C – Sectors (GICS)

Sectors
Consumer Discretionary
Consumer Staples
Energy
Financials
Health Care
Industrials
Information Technology
Materials
Telecommunication Services
Utilities

Appendix D – Definitions

Weight %

Weight of a position in a portfolio

$$Abs(Pi*Qi)/\sum_{i=1}^{N} Abs(Pi*Qi)$$

Where

N = number of stocks in the portfolio

Pi = closing Price of Stock(i)

Qi = quantity of Stock(i) shares to be traded

Gross Value and Net Value

Value = Closing Price on primary market as per T-1* Quantity.

If price not available, last day's closing price is used.

ADV %

The component positions expressed as a percentage of the average volume traded in the component stocks. The average volume of a stock is the number of shares traded per day, averaged over the last 30 days. The average volume provides a measure of the liquidity of the stocks and indicates the ease of which they can be traded on the market.

$$ADV\% = \sum_{i=1}^{N} Wi*(Abs(Qi)/Ai)$$

Where

N = total number of stock positions in the component

Qi = quantity of Stock(i) shares to be traded

Wi = closing weight of position stock(i) in the component

Ai = number of shares traded per day in Stock(i), averaged over the last 30 days

$$= \frac{\sum_{j=1}^{D} Vij}{D}$$

D = 30 days

Vjj = volume of Stock(i) traded on day(j)

Mid Spread (bps)

The arithmetic mean spread in basis points over the bucket period, averaged over the last 30 days.

Avg. Spread (Stock level) = 10,000*(askPrice-bidPrice)/(askPrice+bidPrice),

Avg. Spread (Bucket level) = $\Sigma_i^N W_i$ *Avg. Spread

Average Days to Trade (A.D.T.)

The Average Days to Trade this component of the portfolio. Based on the historical liquidity of the stocks, A.D.T. provides an estimate of the number of days required to trade a component of the portfolio. It is assumed that only one third of the volume can be traded per day.

$$A.D.T. = \sum_{i=1}^{N} Wi*(Abs(Qi)/(Ai*C))$$

Where

N = total number of positions in the component

Qi = quantity of Stock(i) shares

Wi = closing weight of position stock(i) in the component

Ai = the number of shares traded per day in Stock(i), averaged over the last 30 days

C = 33% volume constraint (by default)

Appendix D – Definitions Continued

Volatility %

Volatility is the degree of fluctuation for all component positions, founded by calculating the annualized standard deviation of returns (255 days by default). Expressed as a percentage, this indicates how the portfolio may change over one year's trading. High volatility indicates more risk put potentially higher returns. User can choose to get non-annualized volatility by going into options and unchecking the annualized option.

Vol % =

$$\sqrt{\left(\left(Lv^2*Wl^2\right)+\left(Sv^2*Ws^2\right)-\left(2*Wl*Ws*Lv*Sv*\rho\right)\right)}*255$$

Where,

Lv = volatility of long portfolio positions (See L. Vol %) in the component

Sv = volatility of short portfolio positions (See S. Vol %) in the component

Wl = weight of all long positions in total component

Ws = weight of all short positions in total component

= correlation between long and short positions in the component

$$= \frac{Cov(L,S)}{Lv*Sv}$$

Cov(LS) = covariance between long and short positions in the component

$$= \sum_{l=1}^{N}\sum_{j=1}^{N} Wi*Wj*\sigma ij$$

N = total number of positions in the component

Wi = weight of Stock(i) position in long component positions

Wj = weight of Stock(j) position in short component positions

σij = covariance between Stock(i) and Stock(j)

255 = number of trading days in the year

$$L.Vol\ \% = \sum_{k=1}^{D} \frac{(Rik-RMi)*(Rjk-RMj)}{D}$$

Where

N = total number of long positions in the component

Wi = weight of Stock(i) in long component positions

Wj = weight of Stock(j) in long component positions

σl = volatility of Stock(i) or one standard deviation of the returns

$$= \sqrt{\sum_{j=1}^{D} \frac{\left(Rij-RMi\right)^2}{D-1}}$$

(refer to Exp. Return for variables)

σlj = covariance between Stock(i) and Stock(j)

$$= \sum_{k=1}^{D} \frac{(Rik-RMi)*(Rjk-RMj)}{D}$$

Rik = return on Stock(i) on Day(k)

Rjk = return on Stock(j) on Day(k)

Rmi = mean return on Stock(i)

Rmj = mean return on Stock(j)

D = 30 days

255 = number of trading days in the year

Appendix D – Definitions Continued

Market Impact (bps)

S.Vol % = The short volatility is derived the same as "L. Vol%" using the short component positions

Market Impact is estimated by calculating the average days to trade (ADT), the component positions and adjusting the component's volatility for number of days "D" as defined above

Market Impact (BPS) = Vol% $* \sqrt{A.D.T}$ *10,000

Where

% Vol = component volatility (as derived above)

A.D.T. = Average Days to Trade (as derived above)

Tracking Error %

The index tracking error indicates the amount by which the performance of the long component positions differed from the benchmark index. Calculating the standard deviation of the difference between the component and the index returns derives tracking error.

L.S. Trk = $Stdev$(returns difference)

$$= \sqrt{\left(\sum_{j=1}^{D} \frac{\left(Rj - \bar{R} \right)^2}{D-1} \right)}$$

Where

Rj = difference in returns between component stock positions and the benchmark index on day(j)

= CRj – IRj

CRj = Component returns on long stock positions on day(j)

$$= \sum_{i=1}^{N} CWi * Rij$$

IRj = Index returns on day(j)

$$= \sum_{i=1}^{T} IWi * Rij$$

= mean in the returns difference between component stock positions and the benchmark index

$$= \frac{\sum_{j=1}^{D} CRj - IRj}{D}$$

Rij = the return on stock(i) on day(j)

CWi = closing weight of long stock(i) position in the component

IWi = closing weight of stock(i) in the index

N = total number of long stock positions in the component

T = total number of stocks in the benchmark index

D = 30 days

Appendix D – Definitions

L.S Tracking

L.S. tracking error is derived the same as "Tracking Error %". Except portfolio returns 'LRj' on any day are derived as

Rj = Portfolio returns on stock positions on day(j) for total of 30 days

$$= \sum_{i=1}^{L} Wi * Rij - \sum_{i=1}^{S} Wi * Rij$$

Where: L = number of long positions in the portfolio

S = number of short positions in the portfolio

Wi = Weight of position in respective long or short portfolio

Beta

Beta is a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to a defined index over a period of days

It is defined as: $\beta eta = \dfrac{\mathrm{cov}(stockreturn, indexreturn)}{\mathrm{var}(indexreturn)}$

At bucket level, sign (+/-) for beta is inverted for Overall Beta of short positions. Overall Beta for entire portfolio is calculated by taking a weighted average of long and short betas, with signs being inverted while taking betas for short positions.

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