THOMSON REUTERS EIKON

User Manual

&

Methodology Guide

FOREIGN EXCHANGE, MONEY MARKETS, BONDS, EQUITIES, COMMODITIES AND ENERGY

THOMSON REUTERS

Document History

Version	Date	Authors	Changes
1.	15 July 2016	Chua Rui Ting Vincent Chia	First Issue for Eikon version 4.x

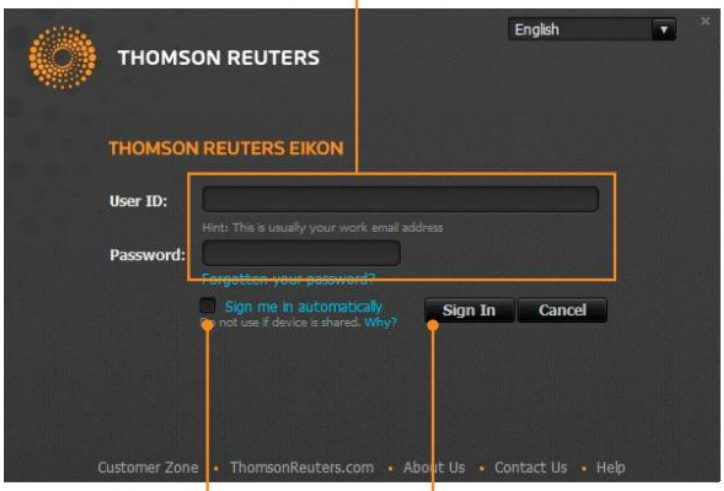
Contents

Part 1: How to Set Up Eikon

1. Setting up Thomson Reuters Eikon

Logging in

1. Point to *Start* > *Programs* > *Thomson Reuters* and choose *Thomson Reuters Eikon*.
2. Type your user ID and password.

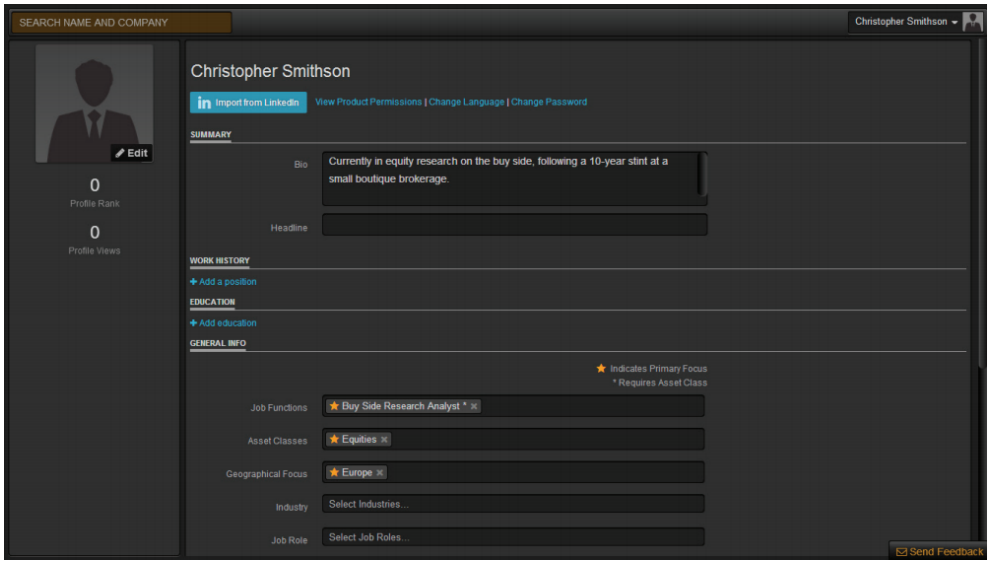


3. Select *Sign me in automatically* to avoid signing in the next time you start the application.
4. Click *Sign In*.

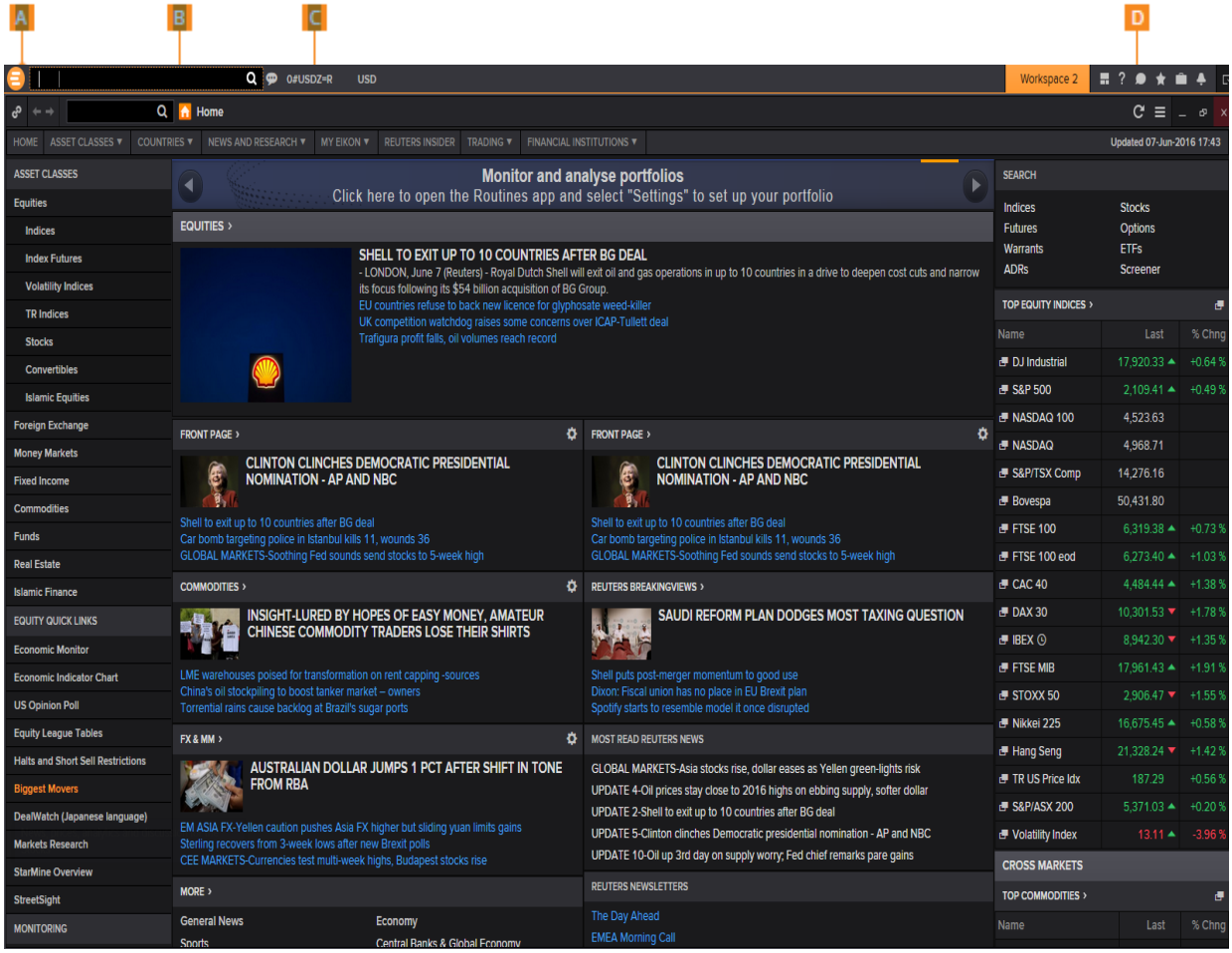
Customizing your Profile

After which, you can proceed to customize your profile. There are two different ways to do so, either by manually entering the information or by importing the page from LinkedIn.

Click on My Eikon > My Profile and Directory



Discovering your Workspace



Here is a list of Applications and functions that you are able to access from the Eikon Homepage.

A. Thomson Reuters Eikon button. Click here to open apps or access menus such as user preferences.

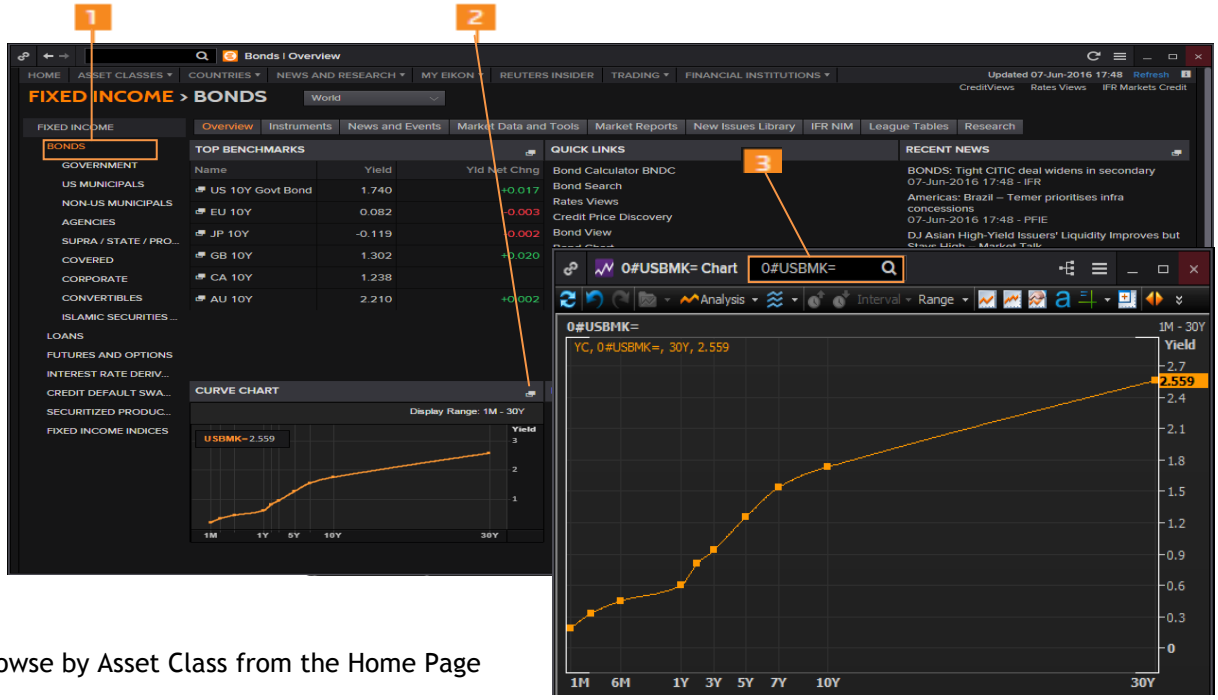
B. The Search box is powered by Autosuggest and Answers. Use it to find information – or answers to your questions.

C. Displays the current active quote, chart or news (shortcuts)

D. Gives immediate access to Messenger, Favourites, and Alerts.

Tip: To customize your profile and view the most relevant home page, click *My Eikon* > *My Profile in the menu bar*.

Browsing by Asset Class or Countries from the Home Page



Browse by Asset Class from the Home Page

1. Click an asset class.
2. Click View real-time.
3. The related real-time app opens.

Tip: Whenever you see , click for real-time data

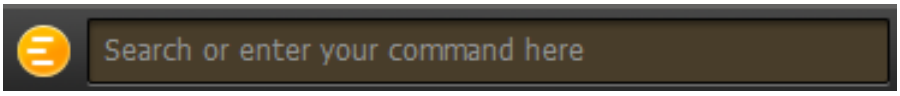
Browse Countries Information from the Home Page

1. Click on COUNTRIES from menu bar
2. Select the Country of interest
3. The related real-time app opens.
4. To change country of interest, repeat step 1 & 2

Find Data, Information and Answers to your Questions

The Search box is a good starting point for your workflow.

Instantly navigate to anywhere in Thomson Reuters Eikon using the Search box. Simply start typing what you want to find and Autosuggest will give you immediate feedback.



For example, start typing Singapore Airline in the Search box. Selecting SIAL.SI will take you to the in-depth Company Overview including analysis tools. Access real-time data by clicking the Quote, News or Chart links in the upper right corner of your screen.

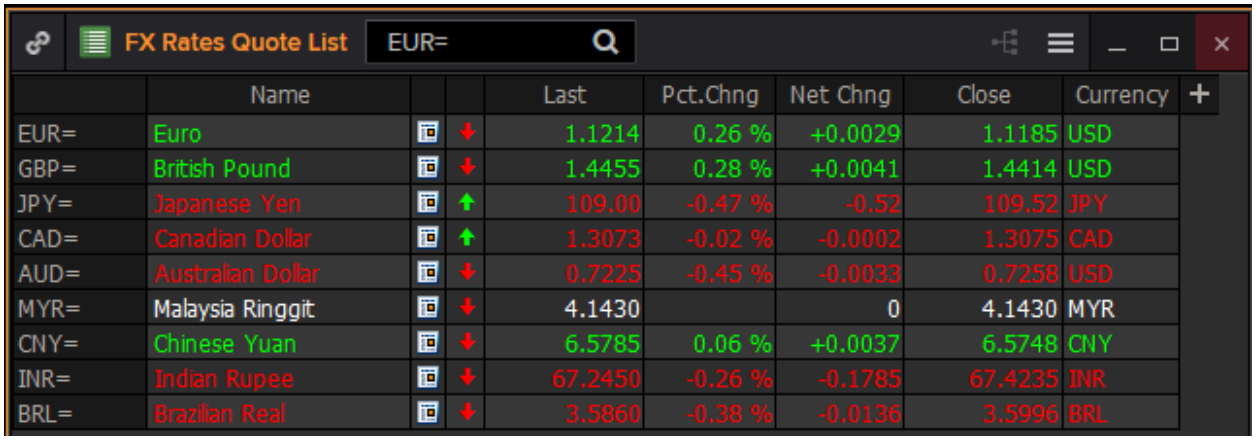
Also, you could type questions such as “What is Google’s P/E?”. Eikon Answers will display the company’s current P/E ratios and provides links to further analysis tools.

Keyword types	Examples
• Company names or common abbreviations	Microsoft, Vodafone, ibm
• Descriptive terms	Comex copper, vodafone common stock
• Standard industry codes	Ticker, ISIN, Cusip, Sedol, WERT
• Specific and partial codes	US459200HJ3, MSFT
• Ticker, coupon, and maturity	VOD >+7.5%, VOD 2015
• TBA syntax or agency names	FNMA <9%, Fannie Mae TBA 2014, Ginnie Mae 1
• Country names for country guides	France, United Kingdom, Japan

2. Applications

There are some key shortcuts that you can use to make Eikon easier for you to utilize.

F2: Quote List



	Name			Last	Pct.Chng	Net Chng	Close	Currency
EUR=	Euro			1.1214	0.26 %	+0.0029	1.1185	USD
GBP=	British Pound			1.4455	0.28 %	+0.0041	1.4414	USD
JPY=	Japanese Yen			109.00	-0.47 %	-0.52	109.52	JPY
CAD=	Canadian Dollar			1.3073	-0.02 %	-0.0002	1.3075	CAD
AUD=	Australian Dollar			0.7225	-0.45 %	-0.0033	0.7258	USD
MYR=	Malaysia Ringgit			4.1430		0	4.1430	MYR
CNY=	Chinese Yuan			6.5785	0.06 %	+0.0037	6.5748	CNY
INR=	Indian Rupee			67.2450	-0.26 %	-0.1785	67.4235	INR
BRL=	Brazilian Real			3.5860	-0.38 %	-0.0136	3.5996	BRL

F4: Quote

F5: Refresh

To refresh any page you are viewing

F6: Max/Min

To minimize or maximize any open application. (e.g. quote app, charts in a document, linked document)

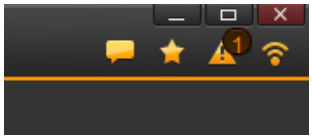
F9: News

F10: Chart

View Related Information

Related features give you access to apps, views, news, or calculators that are relevant to the data you are currently looking at. The list of related features varies according to the instrument you are viewing and the app you are using.

Setting Alerts to Track Market Movement

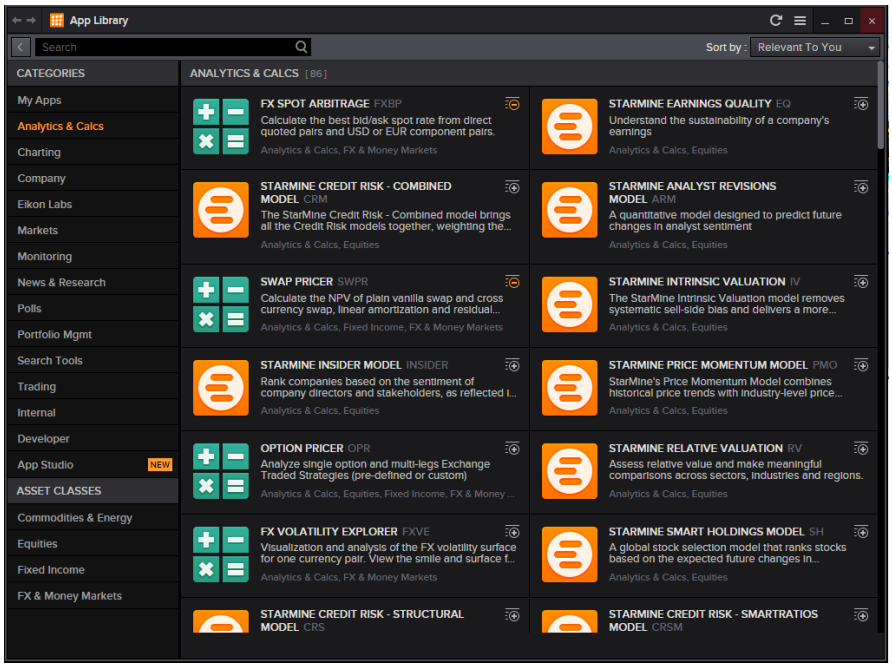


1. Click in the top right of any Thomson Reuters Eikon screen to open Alerts.
2. Click Create New Alert to set up new alerts.
3. Choose the type of data to trigger the alert:
   E.g. Market data ; significant developments; street events; news; research; corporate filings
4. Fill in the alert criteria. For example, you can receive an alert when the instrument price hits a certain threshold.
5. Choose to receive alerts within Thomson Reuters Eikon or by email.
6. Click Set to create your alert.
   The alert indicator tells you how many alerts you have received.

App Library

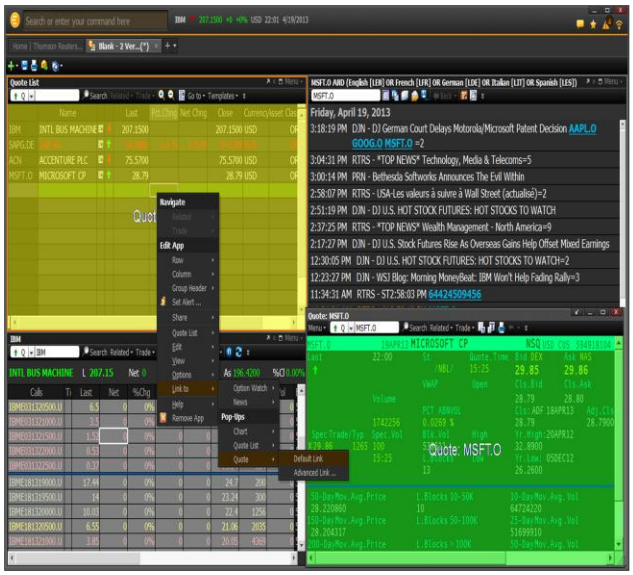
To have an overview of the different applications available on the Eikon Excel platform, one can proceed to the App Library. Here, you can browse according to Asset Classes or different categories.

To get to this page, press the Eikon button on the toolbar and select the App Library shortcut.



Link Apps together in your workspace

- Apps can work alone, or you can link them together to harness the power and flexibility of Thomson Reuters Eikon. You can link apps within a Flex document, or link to pop-up windows so that they share data



1. Insert apps in your Flex document. For example, insert the Quote List, Option Watch, and News Apps.

2. Right-click any app in your Flex document, and choose *Link to*.

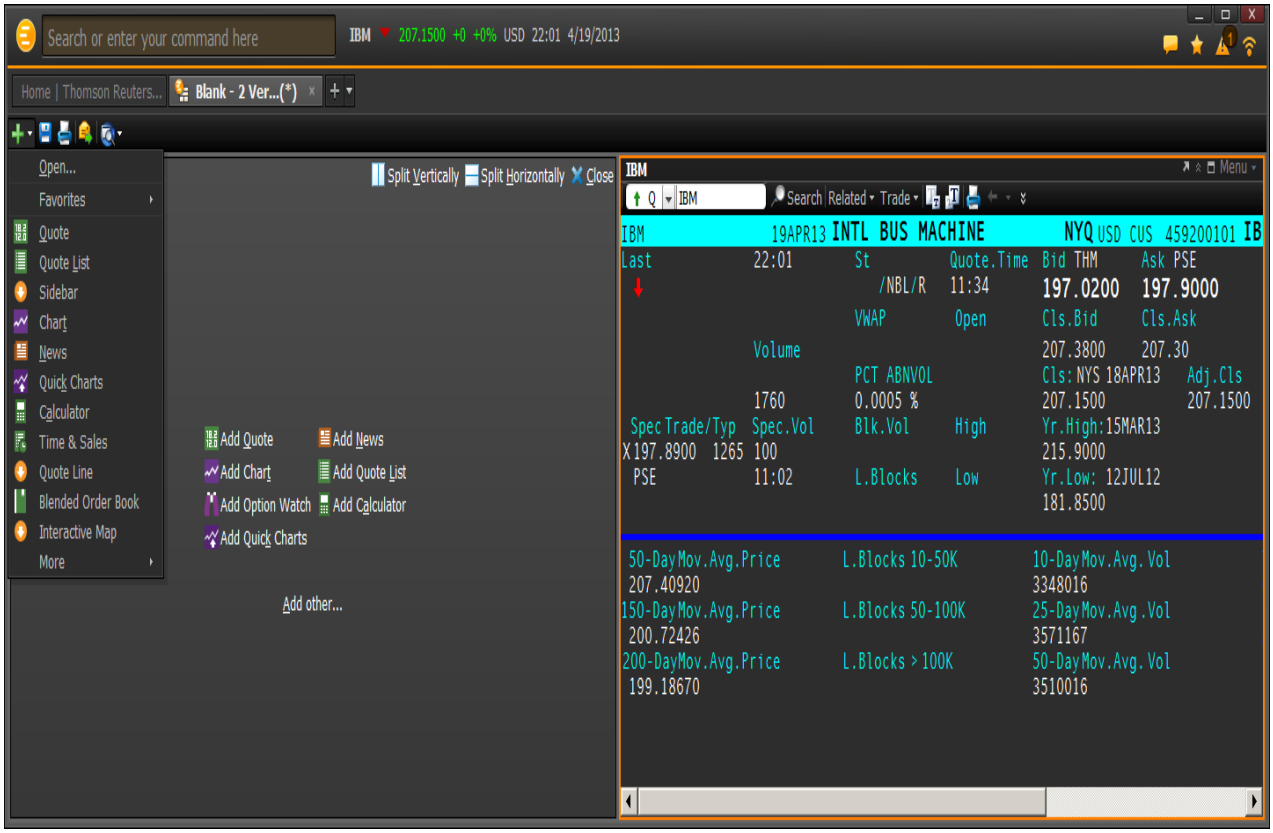
All open apps appear in the list, including pop-ups.

The source has a yellow background, the target (in this case a Quote pop-up) a green one.

3. Choose the app you want to link to.

Note: You can link from another app to a pop-up, but the pop-up cannot be the source app.

Add Apps to Your Document



1. Click Insert.
2. Choose the app you want to add.

Tip: You can also insert any real-time app that you opened from the home page into your Flex document. Just click the pop-in/pop-out arrow in the upper right of the app.

Open Thomson Reuters Eikon in several windows

You can open several Flex documents and home pages in Thomson Reuters Eikon. You can also view several Flex documents and/or home pages at the same time:

Drag a Flex document/home page tab and drop it outside the current window. A new window opens with the selected tab. OR

Go to and then click File > New Window to display the home page in a new window. OR

Press Shift+F3 to open a new window.

Part 2: Introduction to Eikon Excel

THOMSON REUTERS EIKON FOR MICROSOFT OFFICE

QUICK REFERENCE CARD | FREQUENTLY USED FORMULAS

Financial Information

Revenue	TR.Revenue	EV	TR.EV
COGS	TR.CostofRevenueTotal	Market Cap	TR.CompanyMarketCap
Depreciation	TR.Depreciation	Shares Out	TR.SharesOutstanding
Gross Income	TR.GrossProfit	EPS	TR.BasicNormalizedEps
S, G & A	TR.SGandAExp	Fully Diluted EPS	TR.DilutedNormalizedEps
Total operating exp	TR.TotalOperatingExpense	BVPS	TR.BookValuePerShare
Operating Income	TR.OperatingIncome	CFPS	TR.CFPSActValue
Interest Income	TR.NetInterestIncome	FCF Per Share	TR.FCFPSActValue
EBIT	TR.EBIT	DPS	TR.DpsCommonStock
EBITDA	TR.EBITDA	R&D	TR.ResearchAndDevelopment
Pretax Income	TR.NetIncomeBeforeTaxes	Income Tax %	TR.IncomeTaxRatePct
Net Income	TR.NetIncome	Dep & Amortization	TR.DepreciationAmort
Total Assets	TR.TotalAssets	Cash & Equivalents	TR.CashAndSTInvestments
Accounts Payable	TR.AccountsPayable	Receivables Total net	TR.TotalReceivablesNet
Current Liabilities	TR.CurrentLiabilities	Inventories	TR.Inventories
Minority Interest	TR.MinorityInterestBSStmt	Current Assets	TR.CurrentAssets
Preferred Stock Net	TR.PreferredStockNet	Total Debt	TR.TotalDebt
Total Liab & Equity	TR.TtlLiabShareholderEqty	Net Debt	TR.NetDebt

Fixed Income

Issuer Name	TR.FiIssuerName
Maturity Date	TR.FiMaturityDate
Current Yield	TR.FiCurrentYield
Current Price	TR.FiPrice
Principal Amount	TR.FiFaceIssuedTotal

Credit Rating

Rating	TR.GR.Rating
Moodys Rating	TR.FiMoodysRating
S&P Rating	TR.FiSPRating
Fitch Rating	TR.FiFitchsRating

Market Information

RIC	TR.RIC
Closing Price	TR.PriceClose
Opening Price	TR.PriceOpen
Intra Day High	TR.PriceHigh
Intra Day Low	TR.PriceLow
Trading Volume	TR.Volume
Dividend Yield	TR.DividendYield
BETA 5 Year	TR.BetaFiveYear
Shares Outstanding	TR.SharesOutstanding
Headquarters	TR.HeadquartersRegion
Industry	TR.TRBCIndustry
Business Description	TR.BusinessSummary

Consensus Estimates

Average Broker Rec	TR.RecMean, TR.RecLabel
Price Target	TR.PriceTargetMeanEst
CAPEX	TR.CAPEXMean
Operating Income	TR.OPRMeanEstimate
Revenue Estimate	TR.RevenueMeanEstimate
EBITDA Estimate	TR.EBITDAMean
EBIT Estimate	TR.EBITMean
Net Income Estimate	TR.NetIncomeMeanEstimate
CFPS Estimate	TR.CFPSMean
EPS	TR.EPSMeanEstimate
DPS	TR.DPSMean
ROE	TR.ROEMean
ROA	TR.ROAMean

Valuation (historical)

EV/Total Revenue	TR.EVToSales
EV/EBITDA	TR.EVToEBITDA
EV/EBIT	TR.EVToEBIT
P/BVPS	TR.PriceToBVPerShare
P/TangBVPS	TR.PriceToTangBVPerShare
P/E	TR.PE

Valuation (forecast)

EV/Fwd Total Rev	TR.EV/TR.RevenueMeanEstimate
Fwd EV/EBITDA	TR.EV/TR.EBITDAMean
Fwd EV EBIT	TR.EV/TR.EBITMean
Foward P/EPS	TR.PtoEPSMeanEst
PEG Ratio	TR.PEG
P/Foward CFPS	TR.PtoCPSMeanEst

Valuation SmartEstimates

Fwd EV/Revenue	TR.FwdEVtoREVSmartEst
Fwd EV/EBIT	TR.FwdEVtoEBISmartEst
Fwd EV/EBITDA	TR.FwdEVtoEBTSmartEst
Fwd P/EPS	TR.FwdPtoEPSSmartEst

Date and Time functions

=DfAddWD	Adds the number of working days to a date
=DfAddMonths	Adds the number of months to a date
=DfAddYears	Adds a number of years to a date
=RTNow	Retrieves the current system time
=RTToday	Retrieves the current system date

Syntax: =DFAddMonths (Calendars, CalcDate, NbMonths, DfMode)
e.g. =DfAddWD("USA","30JUN05",2,"")
Function Output: July 5th 2005 (July 4th 2005 is a non-working day in the US, hence the next working day is retrieved)

Financial Period Syntax

Relative Periods

FY[n] Fiscal Year
FQ[n] Fiscal Quarter
FI[n] Fiscal Interim
FS[n] Fiscal Semi-Annual
CY[n] Calendar Year

(Replace n with 0 for last reported period, -1 for previous period and 1 for next period)

Absolute Periods

FY[YYYY] e.g. FY2014, FY2012
CY[YYYY] e.g. CY2013
[q]FQ[YYYY] Fiscal Year/quarter e.g. 3FQ2013
[s]FS[YYYY] Fiscal Semi-Annual e.g. 2FS2013

Period Argument Codes

FY0	Last Fiscal Year
FY1	Next Fiscal Year
FY-1	Previous Fiscal Year
FQ0	Last Fiscal Quarter
FI	Fiscal Interim
FS	Fiscal Semi-Annual
CY	Calendar Year
LTM	Last Twelve Months
NTM	Next Twelve Months

NULL: Populating empty cells

NULL:ZERO	displays 0
NULL:NA	displays #NA
NULL:NAND	displays #N/A ND
NULL:SKIP	skips line if no data for at least one instrument
NULL:PREVIOUS	duplicates value of the previous data point
NULL:NEXT	duplicates value of the following data point

Scale Parameter

0	No Scaling
3	Scale the value into thousands
6	Scale the value into millions
9	Scale the value into billions

Chain Instruments

e.g. 0#.DJA, 0#.FTSE, 0#.STOXX, 0#.NDX, 0#.N225
(.FTSE is the RIC of FTSE100 index, while 0#.FTSE gives all the RICs for the index constituents)

Eikon Formulae Shortcuts

=RIC	Identifier lookup
=DI	Data Item lookup
=ANS	Answers your question
=TR	Formula builder

CTRL - Selects top hit
TAB - Moves to next argument
Enter - Commits function
Esc - Exits out of assistant

Basic Eikon Formula

TR(Instrument(s), Data Item(s), Parameters(s))

"=TR("MSFT.O","TR.TotalRevenue","Period=FY0")

displays Microsoft's most recent fiscal year total revenue.

Advanced Eikon Formula

TR(Instrument(s), Data Item(s), Parameters(s), Destination cell, Cell references)

"=TR("MSFT.O","TR.Revenue","Period=#1 Scale=#2 Curn=#3 CH=Fd",A1,B1,C1,D1)

displays : Microsoft's Revenue for the period in cell B1, scaled to the number in C1 converted to currency in D1, with column header. The output is shown in cell A1

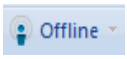
Useful ISO Codes

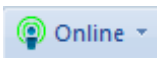
Australian Dollar	AUD
British Pound	GBP
Canadian Dollar	CAD
Chinese Yuan	CNY
Danish Kroner	DKK
Euro	EUR
Hong Kong Dollar	HKD
Japanese Yen	JPY
Swedish Kronor	SEK
Swiss Franc	CHF
US Dollar	USD

1. Basics to Eikon Excel

Overview

In order to access Eikon Excel, one should open the Thomson Reuters – Microsoft Excel application and do the following.

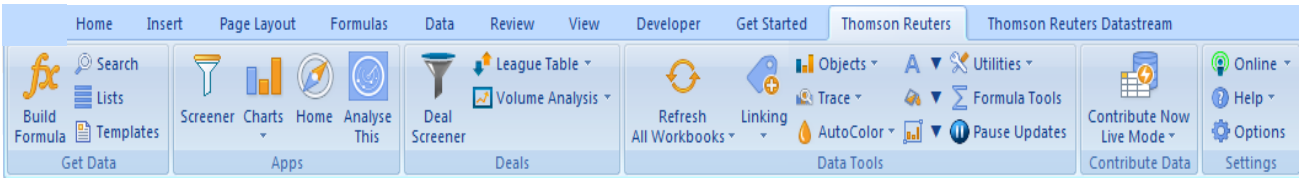
In the Thomson Reuters tab, press on the 

button to log in. Ensure that the button now shows 

before proceeding.

Despite the many capabilities of the application, we will only focus on the core functions required for you to utilize.

On the Thomson Reuters Tab, the following can be seen



Key Functions Available in Eikon Excel

1. Data Retrieval

The data retrieval function could be used to retrieve real-time data and to generate tables containing a list of instruments and data items. (E.g. EPS of Apple)

2. How to build your own formula

Using the “Build Formula” button in the toolbar, one can use the application to customize their own formulas with different instruments, data items and specific parameters. Here, both real-time and historical figures can be retrieved.

3. How to screen for stocks

Similar to the SCREENER application in Eikon, one can use this application to generate a list of equities based on their filter preferences.

4. How to plot charts

Real-time charts with the ability to reflect real-time changes can be plotted with this function

5. How to use templates to generate more complex spreadsheets

Using the sample templates available in Eikon Excel, users who wish to prepare more sophisticated spreadsheets can now do so with ease.

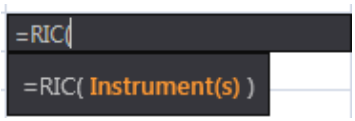
How to Generate a Basic Table <=RIC> and <=DI>

Note that the positioning of where the information is entered is important. Hence, we would provide example cell numbers in order to illustrate the following.

Assuming you have a new spreadsheet open in Excel, the following steps could be observed in order to generate a list or table of data and instruments.

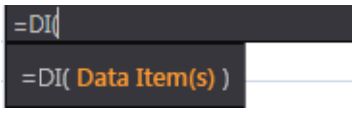
1. In Cell A2, (A3, A4 etc), enter the list of RICs (Reuters Instrument Code) you require.

Type **"=RIC("** to pull up the following function and type in the instruments. Note that you can only enter one instrument per row. The code will also be hard coded and is not part of a formula.



2. In Cell B1 (C1, D1 etc), enter the list of Data Items you require.

Type **"=DI("** to pull up the following function and type in the data items (e.g. EPS, Dividend). Note that you can only enter one Data item per row.



3. After keying in all your required instruments and data items, right-click in cell B2 and select **<Thomson Reuters SpeedData>** for the results to appear as follows.

	TR.TotalRevenue	TR.CompanyMarketCap	TR.RepEPSMean
STEL.SI	16961200000	61297552416	0.25019
DBSM.SI	NULL	39225098942	1.72953
STAR.SI	2444300000	6174211233	0.2005
MONE.SI	1157196000	2361796484	0.18769
OCBC.SI	NULL	34730446296	0.87755
C	NULL	1.26672E+11	4.70414

4. To "refresh" the table to make new figures appear for every RIC or DI entered, there are two ways to do so:

A: Right Click in B2 and repeat Step 3 to make the figures appear again

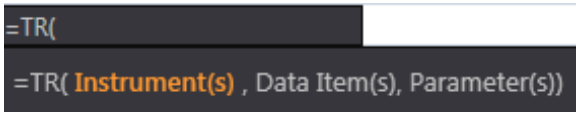
B: Press F2 after selecting B2 and drag the formula box to include the new RICs and DI

Please refer to the next page for another method to create the list.

How to use the <=TR> function on Excel

Users who wish to create a more complex list or table may find the above example a little tedious. Hence, there is another method, albeit more complicated, that could be used.

1. In any empty cell, type **"=TR("** to pull up the following.



2. To start off, we would choose different instruments (E.g. AAPL.O for Apple and GOOG.O for Google), pressing enter after each instrument.

3. To continue to the Data Items, press the TAB button

4. Enter different data items (e.g. Total Revenue, Company Market Cap), separating each item by pressing enter.

5. Moving on to the period parameter, first type **<PERIOD>** and hit enter, type in FY0

6. In order to make the Column and Row Headings appear, press enter after deciding the period and type **<CH>** and **<RH>** and select Field and Instruments respectively.

This would generate a formula similar to the following

=TR("GOOG.O;AAPL.O","TR.TotalRevenue;TR.CompanyMarketCap;TR.BasicNormalizedEps","Period:FY0 SDate:0CY EDate:-1AW; CH:Fd; RH:In")

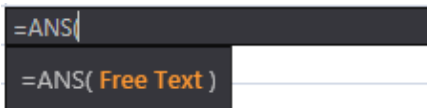
Updated at 16:38:09	Total Revenue	Company Market Cap	Basic Normalized EPS
GOOG.O	66001000000	5.28448E+11	20.59118
GOOG.O	66001000000	5.16205E+11	20.59118
GOOG.O	66001000000	5.17176E+11	20.59118
GOOG.O	66001000000	5.16782E+11	20.59118
GOOG.O	66001000000	5.04557E+11	20.59118
GOOG.O	66001000000	4.96985E+11	20.59118
GOOG.O	66001000000	4.98263E+11	20.59118
GOOG.O	66001000000	5.05931E+11	20.59118
GOOG.O	66001000000	4.88298E+11	20.59118
GOOG.O	66001000000	4.97236E+11	20.59118
GOOG.O	66001000000	4.8308E+11	20.59118
GOOG.O	66001000000	4.8308E+11	20.59118

Also, the table will be refreshed when you press the **<Refresh All Workbooks>** button in the Thomson Reuters Toolbar.

How to use Eikon Answers on Excel <=ANS>

Alternatively, in order to generate an active formula, instead of a hard code, one can type **<=ANS>** with your requirements, similar to how Eikon Answers works on Eikon.

1. Type **"=ANS("** in any empty cell to pull up the following function



2. In the free text area, specify the companies and data items needed, leaving a space between each item. (e.g. UOB DBS OCBC Company Market Cap) or (e.g. UOB DBS OCBC EPS)

3. This would automatically correct into a function and display the results in a table, with an underlying active formula as shown below.

Updated at 17:51:57	Company Market Cap
UOBH.SI	29330412700
DBSM.SI	39331170914
OCBC.SI	34745247757

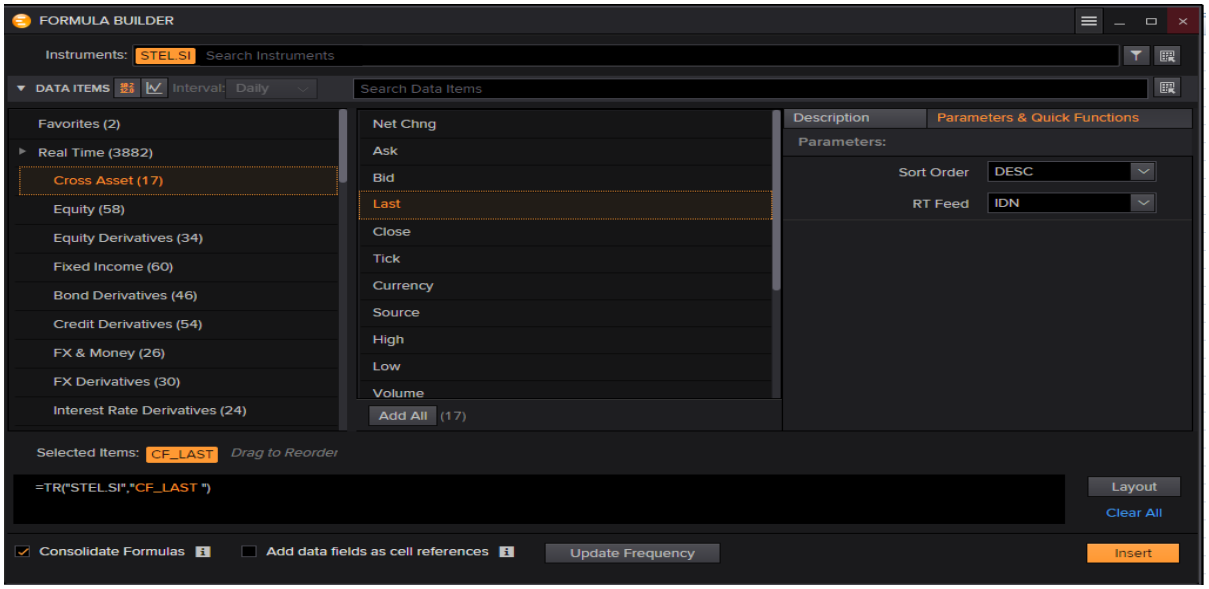
Real-Time Data with Formula Builder

One last way to retrieve real-time data is to utilize the Formula Builder Application, by pressing on the **<Build Formula>** icon in the Thomson Reuters toolbar.

1. Insert the RIC that you require

2. Insert the data item you wish to inquire about. Note that the code for the last-trading price is **<CF_Last>**

3. Press Insert.



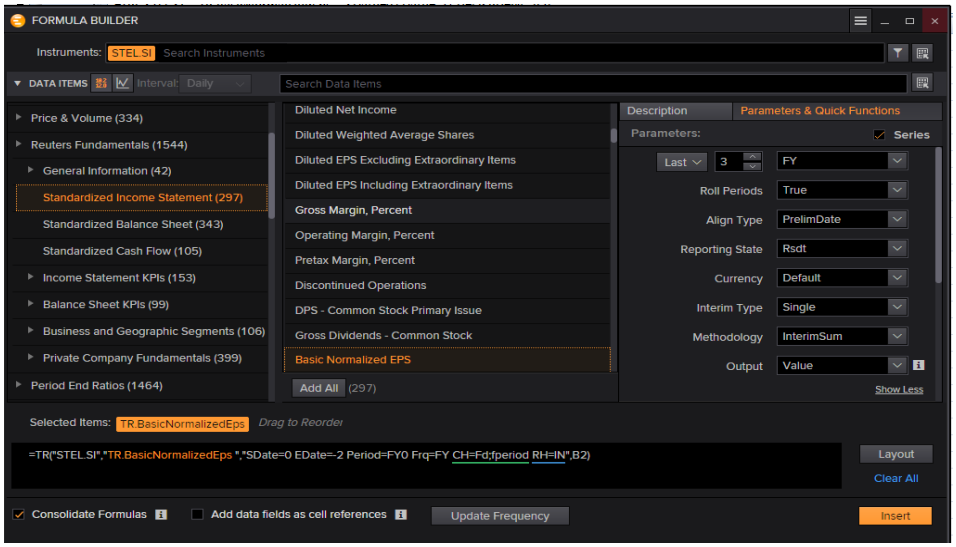
Alternatively, enter the following **=TR("STEL.SI","CF_LAST")** for the figure.

2. Formula Builder

Method 1: Formula Builder manually

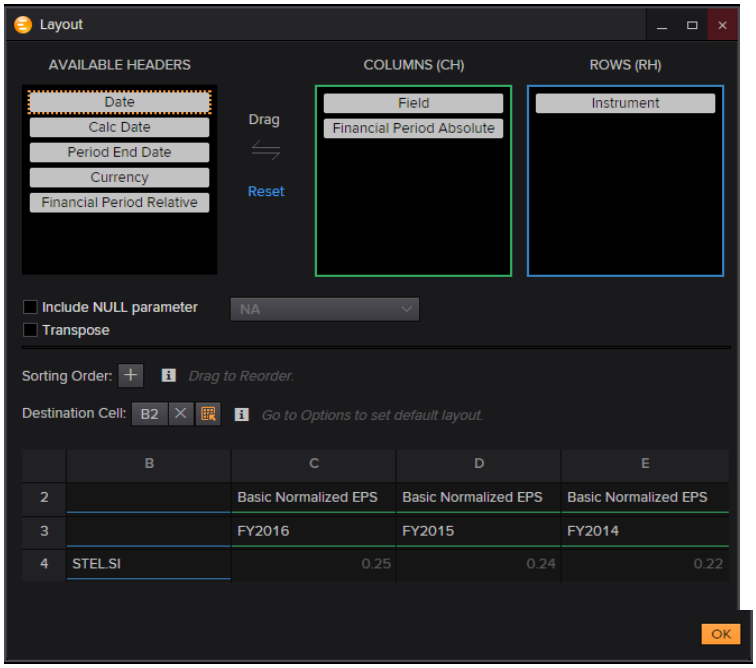
In order to enter data manually, you should do the following:

1. Enter the RIC (Instrument) required, and search for the data items either through the scroll menu at the side or by searching in the “Search Data Items” Bar.



2. After choosing the data item required, proceed to the “Parameters & Quick Functions” Tab to adjust the different Periods, Currency and data required.

3. After selecting the items, select layout to arrive at the following page. Here, edit the type of headings you require and view a preview screen at the bottom. Press Ok to insert an active formula in your destination cell.



Method 2: Formula Builder through Cell Referencing

To build a formula through cell-referencing, one should first set up a table as shown below

	TR.EPSMean		
	FY2015	FY2016	FY2017
STEL.SI			
DBSM.SI			
STAR.SI			

Open the Build Formula application.

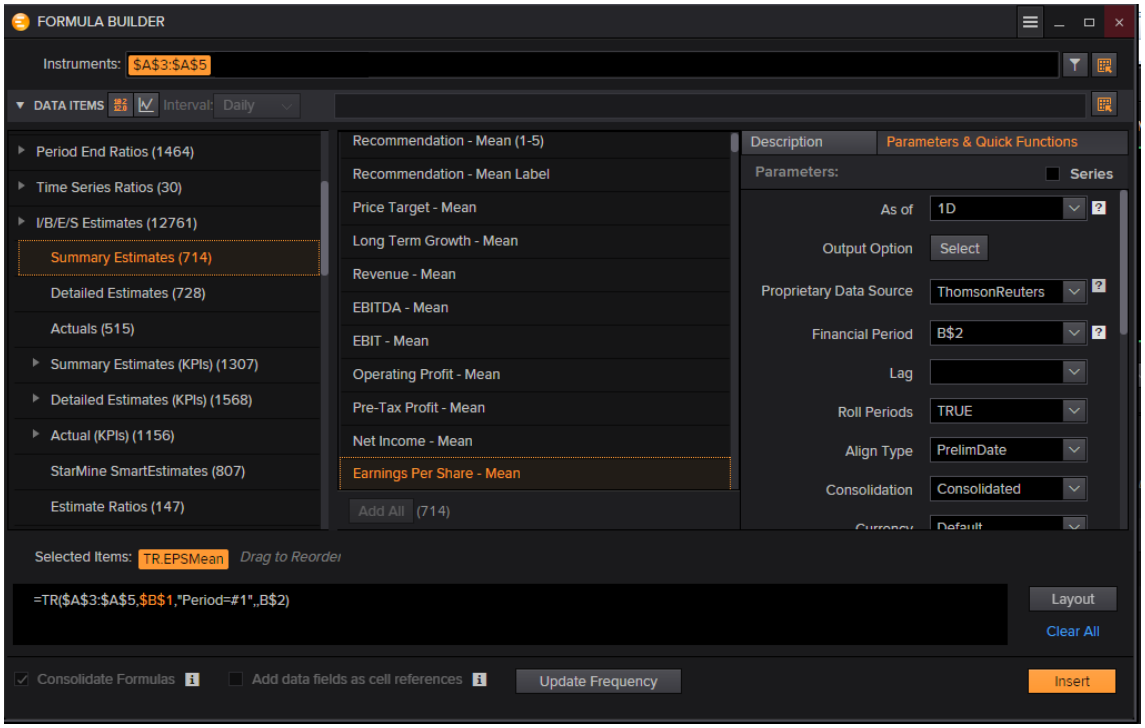
1. Instrument Cell Reference by selecting the  icon next to the instrument search bar

2. Data Item Cell Reference (Note that the Data Item should be entered through the TR convention)

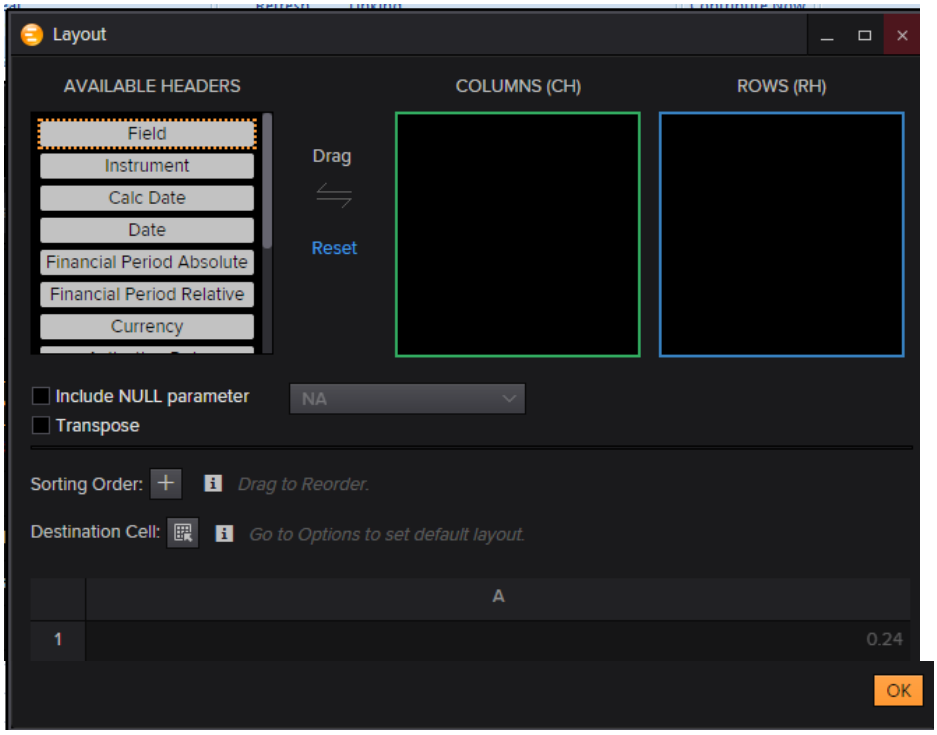
3. In the parameters tab, change the financial period to the last option **<CELLREF>** and select "FY2015"

Note: the year has to be typed with no space in between FY and 2015

4. Change the Cell Reference to remove the "$" in front of the alphabet signifying the column. Note that this is essential.



5. Go to layout and remove all the fields, as shown below. Under the Destination Cell, press “x” to delete any destination cell selected by default.



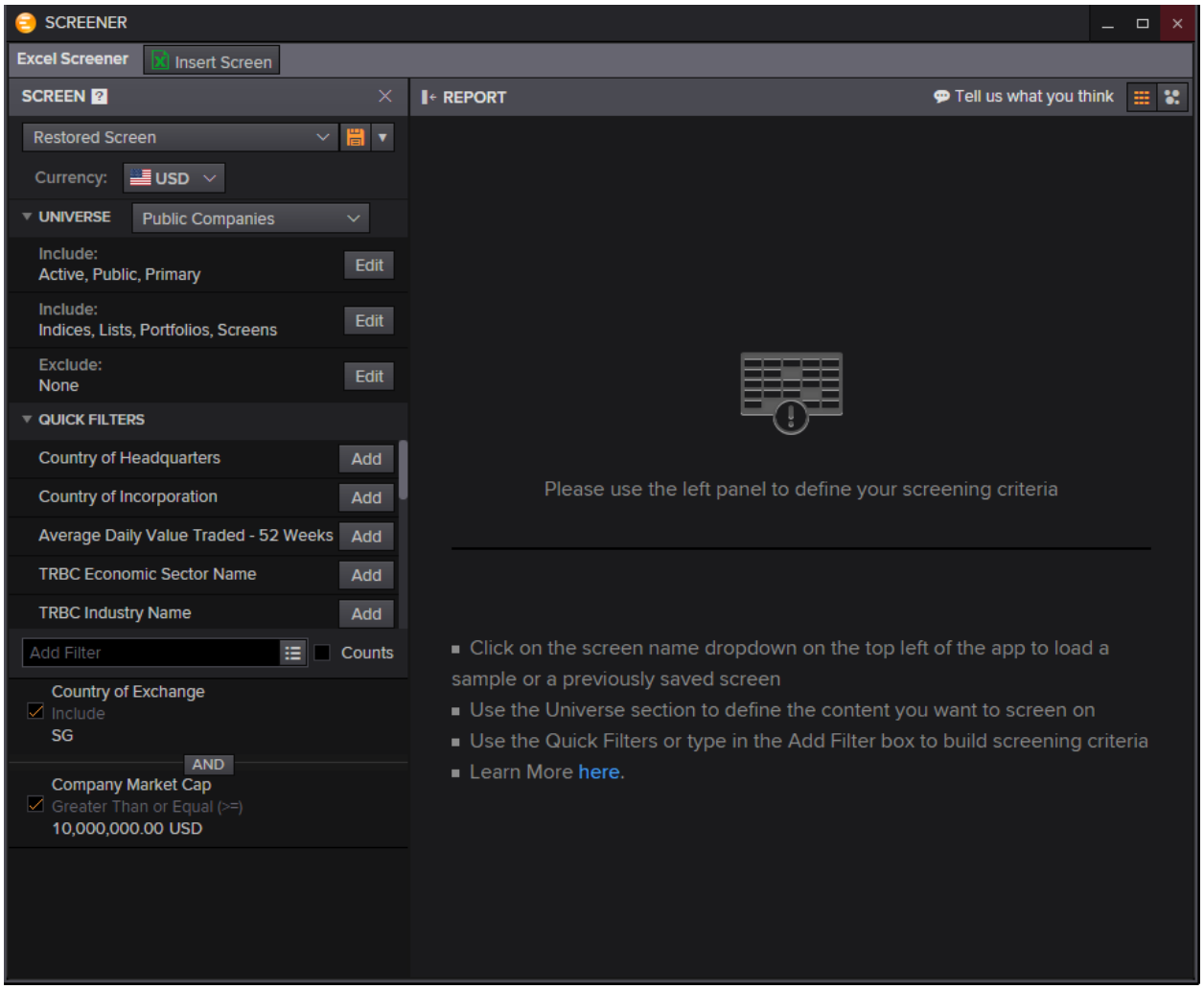
6. To create the table, drag the formula to cover all the necessary cells.

3. Screener

The screener application on Eikon Excel is largely similar to that on Eikon itself, with a similar interface and design.

Press the **Screener** button in the Eikon Toolbar.

Adjust all the necessary fields, including the currency and universe (type of companies).



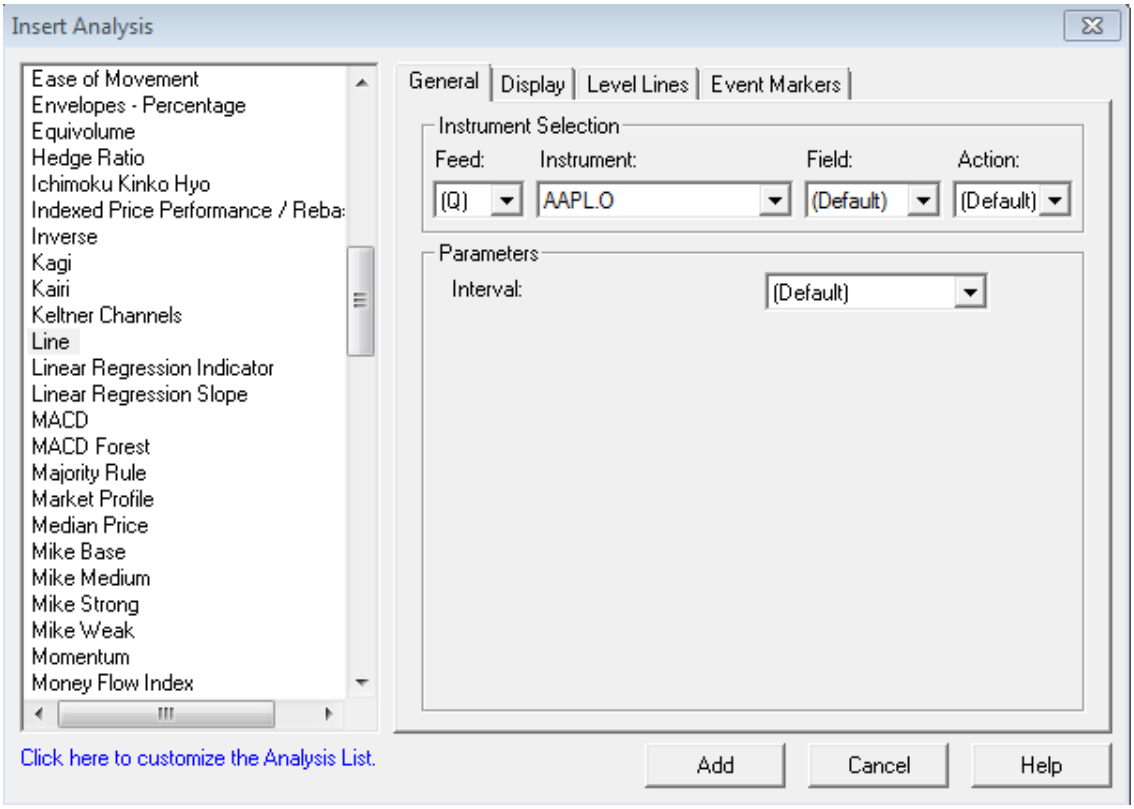
Generate a table that will look like the following by pressing **"Insert Screen"**

Company Common Name	Country of Exchange	Company Market Cap
Tiong Seng Holdings Ltd	Singapore	81433429.62
Global Palm Resources Holdings Ltd	Singapore	44205197.11
Bund Center Investment Ltd	Singapore	426673773
ES Group (Holdings) Ltd	Singapore	12508489.59
Smartflex Holdings Ltd	Singapore	18574900.34
Leader Environmental Technologies Ltd	Singapore	22781965.16
Yamada Green Resources Ltd	Singapore	35323375.57

4. Charting

Plot charts on Eikon Excel through the **Charts** button in the Toolbar using a similar interface to that of the F10 shortcut.

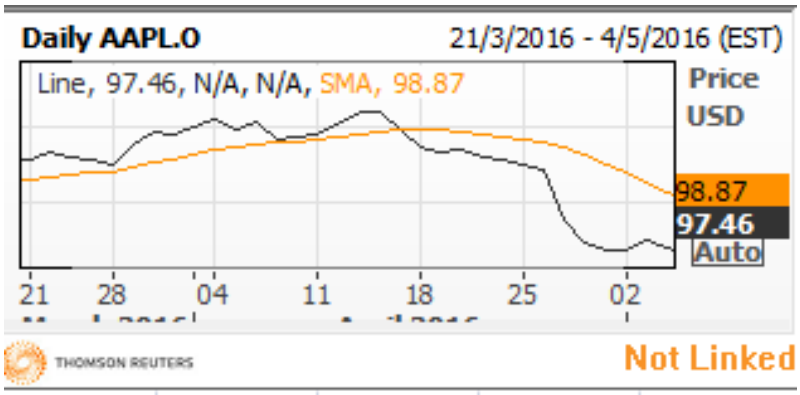
After specifying the range of cells to insert the chart component and the range of cells to be linked (if any), you will be prompted with the below page.



Here, you can select the line you want to plot, as well as insert any analysis necessary.

To return to this page after inserting the chart, press on the **Charts** button in the toolbar once again and click on Manage Charts > Insert Analysis.

You should be able to view a chart as follows.



Note that the date as well as the time zone can be customized to your needs as well

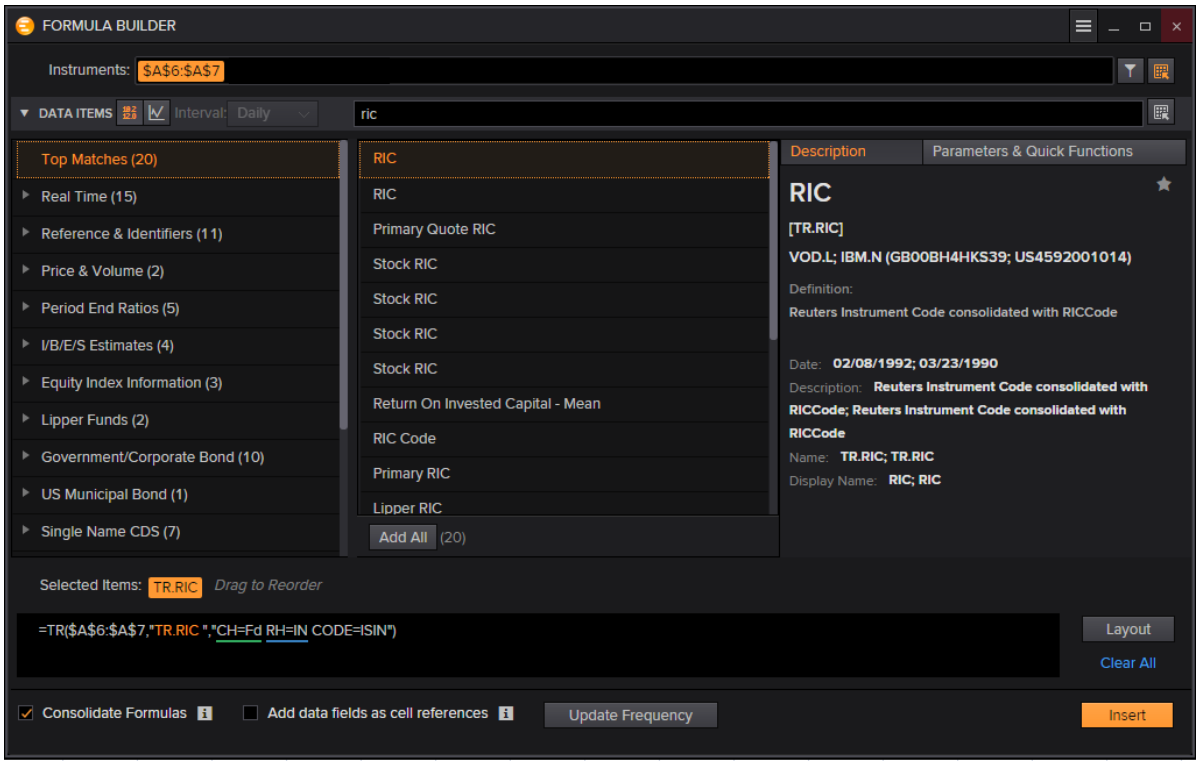
5. ISIN to RIC

Using Microsoft Excel, one is able to translate the ISIN of different instruments to the RIC as stated on Eikon.

1. In Eikon Excel, ensure that the two different ISIN code (or Sedol codes) are in different cells.

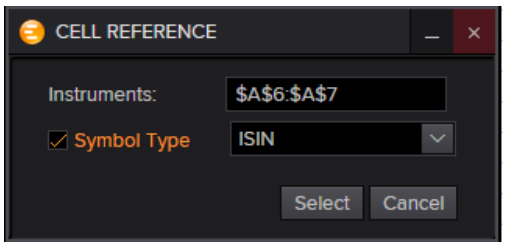
GB00BH4HKS39
US4592001014

2. Open the Formula Builder through the Eikon Toolbar.



3. Use the cell reference feature to link the cells to the instruments as required.

4. Tick the box next to the “Symbol Type” and select the type of code currently used (e.g. ISIN)

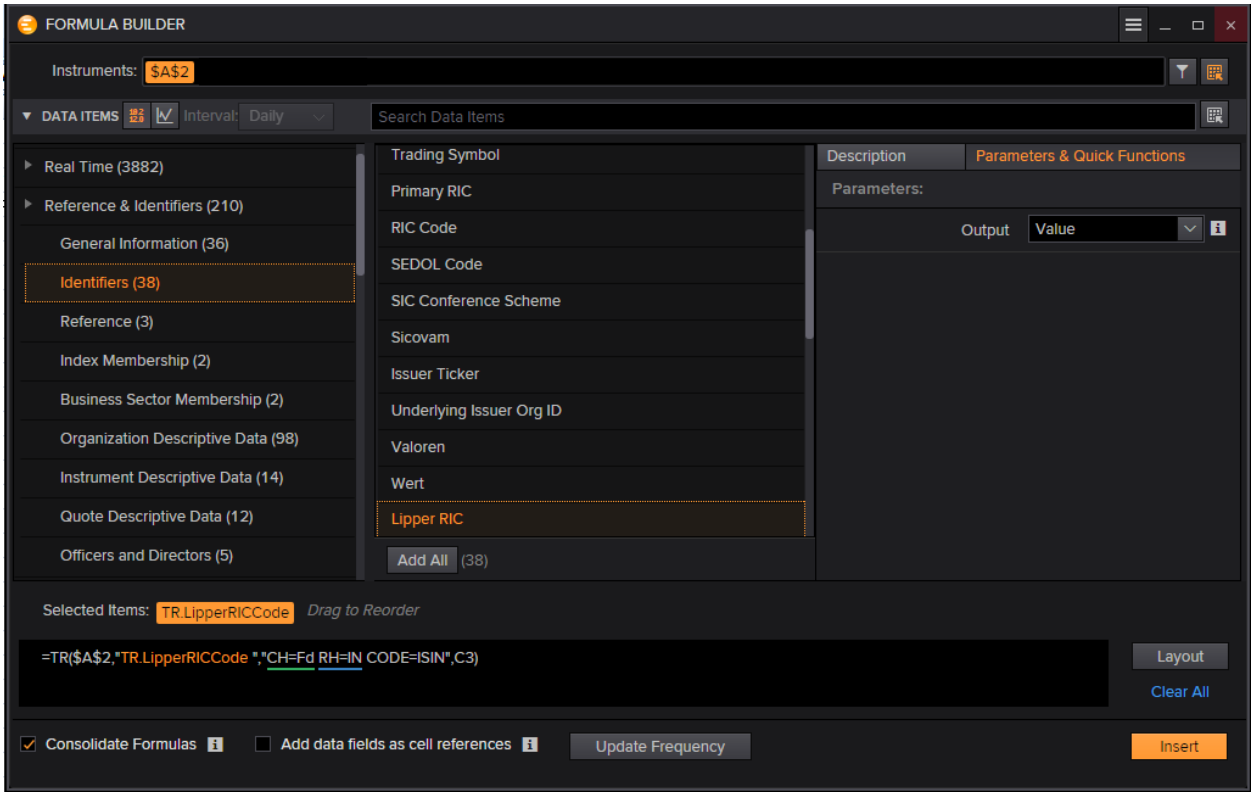


5. The RIC would then be generated as follows.

Updated at 10:07:23		
		RIC
	GB00BH4HKS39	VOD.L
	US4592001014	IBM.N

Alternatively, users can translate ISIN codes into Lipper RICs as well.

1. After opening the Formula Builder, select the Identifiers > Lipper RIC



2. After cell-referencing as shown above, click insert and the following codes will be generated.

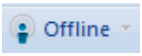
Updated at 10:07:23		
		Lipper RIC
	US04315J2096	LP40050069

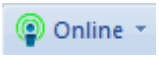
Part 3: Introduction to DataStream on Excel

1. Overview

This short introduction will only serve as a simple guide to the DataStream feature available on Eikon Excel. For a more in depth understanding, please refer to the full **Thomson Reuters DataStream** User Manual instead.

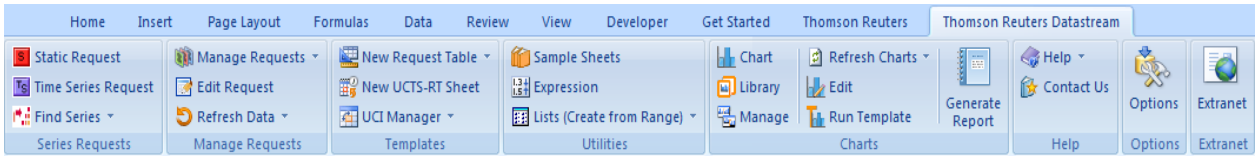
To use DataStream for Microsoft Office Excel, use the **Thomson Reuters DataStream** menu in your Excel application.

In the Thomson Reuters tab, press on the 

button to log in. Ensure that the button now shows 

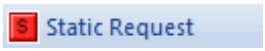
before proceeding.

At the **Thomson Reuters DataStream** tab within Eikon Excel, the following options can be found.



We will only be looking at 4 of these options in detail.

1. Static Request



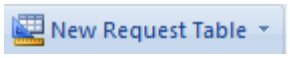
The static request function allows you to request data for a specific date. For example, the price, PE or dividend yield for Apple on 14/01/1994.

Static Requests are also mostly utilised to pull up information about an instrument, such as sector information, and other identifiers such as ISIN and Sedol Codes.

2. Time Series Request

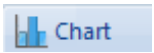
The time series request function allows you to request data over a specific data, defined by a start date, end date and frequency of data. For example, you can check the daily price of Apple from 14/01/1994 to 12/04/1994.

3. New Request Table



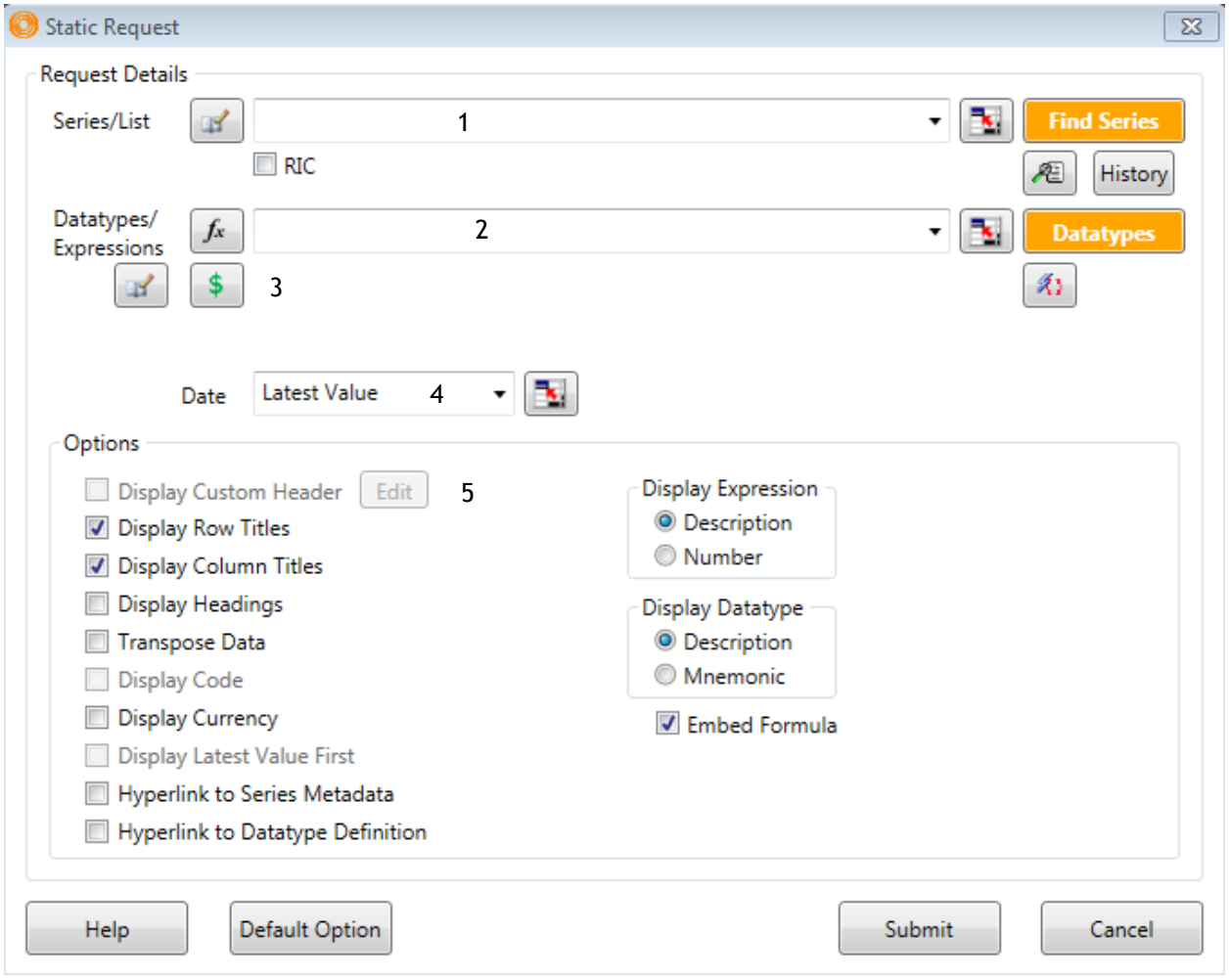
Users can consolidate their list of requests and organize them from here.

4. Chart



A visual representation of the time series data can be obtained. Economic indicators and their respective charts can also be generated.

2. Static Request



There are 5 main pieces of data that you would require to key in when using the **Static Request Function.**

1. Series/List
2. Datatypes/Expressions
3. Currency
4. Date
5. Options

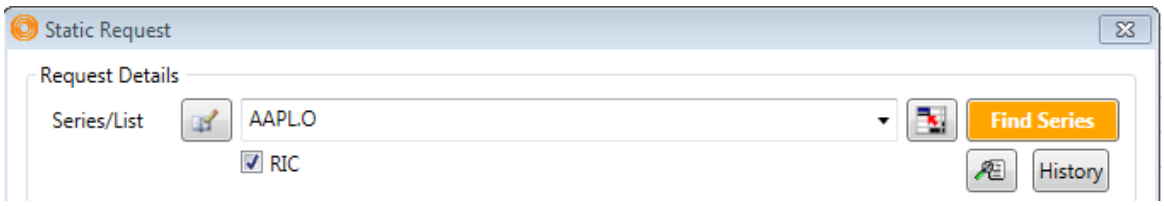
Series/List

Here, you would need to specify the instrument that you wish to enquire about.

Other than typing in the name of the issuer, there are 3 ways for you to search for the instrument.

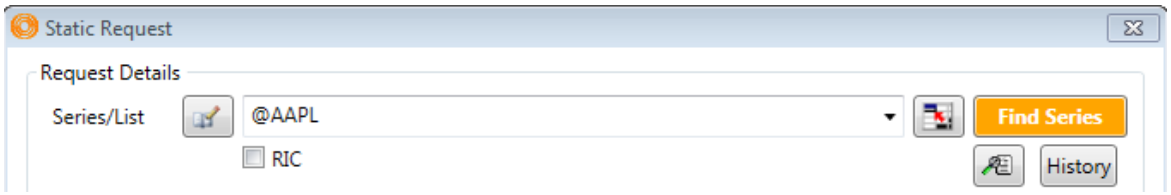
Firstly, you could key in the **RIC (Reuters Instrument Code)** if you are familiar with the shorthand.

E.g. If you know the RIC code for Apple (**AAPL.O**), you do the following.

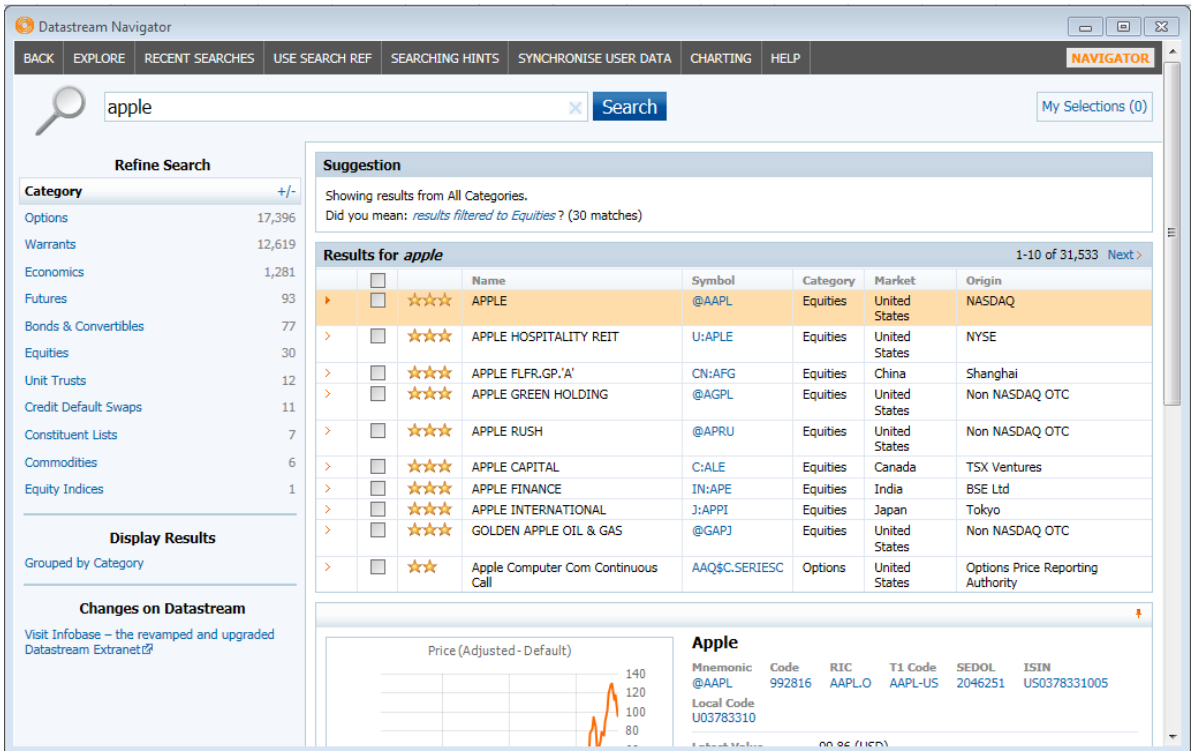


Tick the RIC box and type in the RIC of the instrument you require. Lists could be entered by separating RICs or DataStream codes with a comma. “,”

Secondly, you could key in the **DataStream Instrument Code** as follows, (E.g. @AAPL)



Thirdly, if you do not know either, you could search for it by pressing on the Find Series button.



Double click the symbol of the instrument or click on the box and press **Use**.

Datatypes/Expression

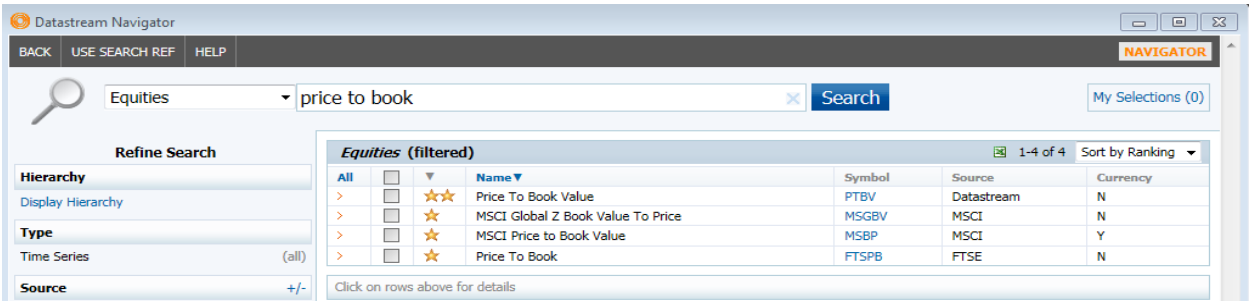
In this box, the specific type of data necessary could be selected.

By default, if the box is left blank, the default data (e.g. price) of the instrument would be provided.

However, you could instead enter the different datatypes if you know the code. Lists could also be entered by separating each datatype with a comma.

For example, commonly used datatypes include **PE** (Price-to-earnings ratio) and **EPS** (Earnings per Share).

Alternatively, you could similarly use the **DFO Navigator** by selecting the Datatypes button.

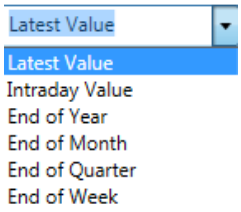


Type in the datatype that you wish to search for and double click on the symbol or click the box next to the name and press use.

Currency

Press on the $ button in order to adjust the currency. By default, the currency would be set to the local currency.

Date

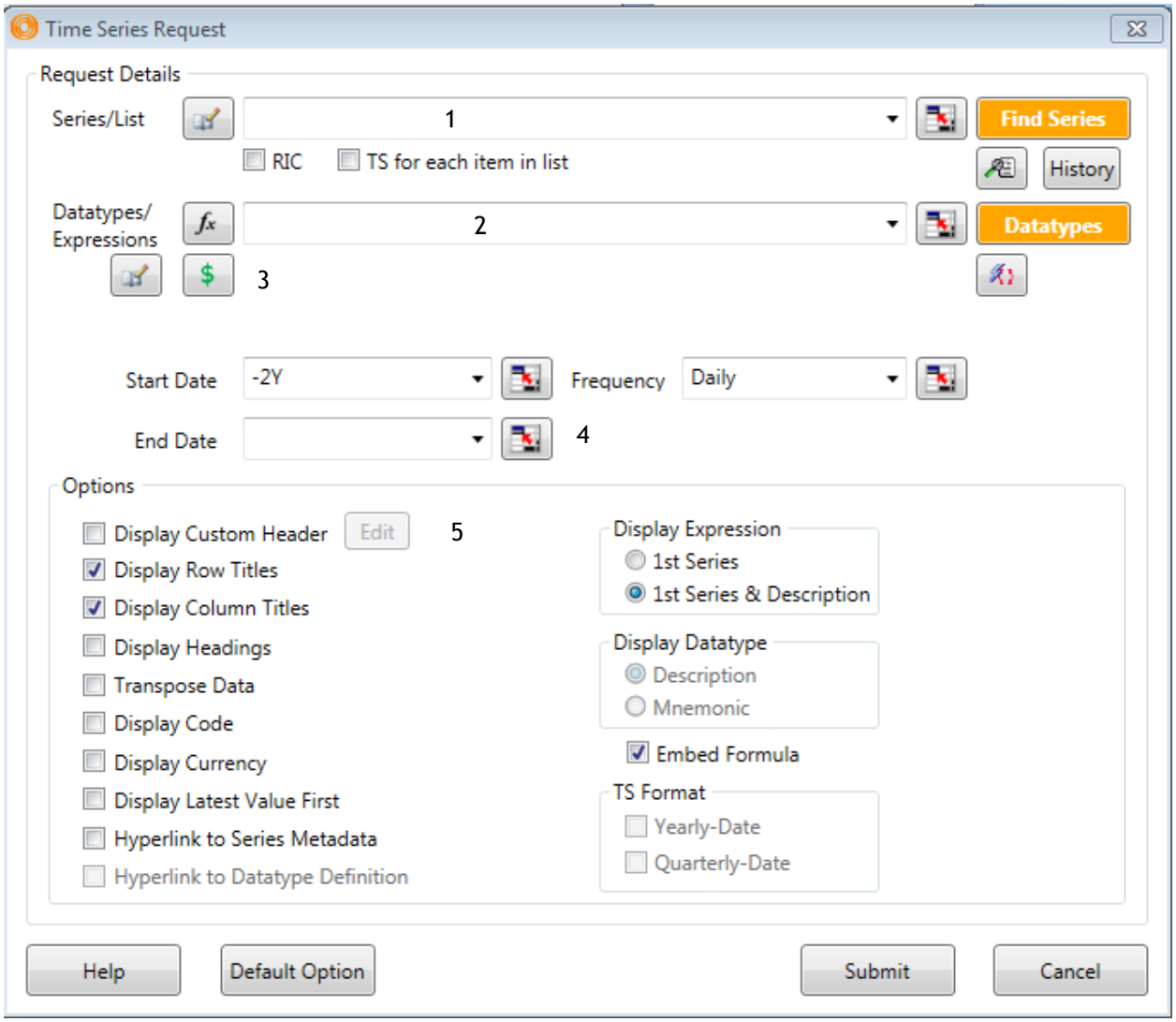


Choose the Date that you wish to obtain data for. For example, the latest available value is most commonly used.

Options

Here, you could choose what titles you would want to be generated. Typically, the row and column titles are used.

3. Time Series Request



In order to conduct a time series request, the steps 1-3 and 5 are the same as that of a static request, with the difference being in the 4th step (Start, End Date and Frequency)

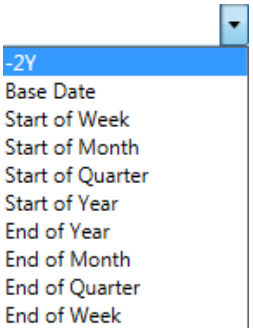
1. Series/List
2. Datatypes/Expression
3. Currency
4. Start Date, End Date and Frequency
5. Options

Start Date, End Date and Frequency

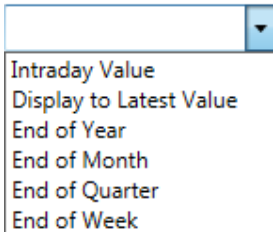
When conducting a time series request, you would need to key in the start and end date as well as the frequency required.

The drop down tables are as follows,

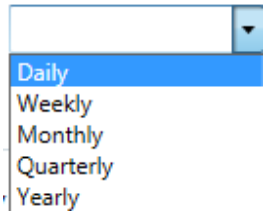
Start Date

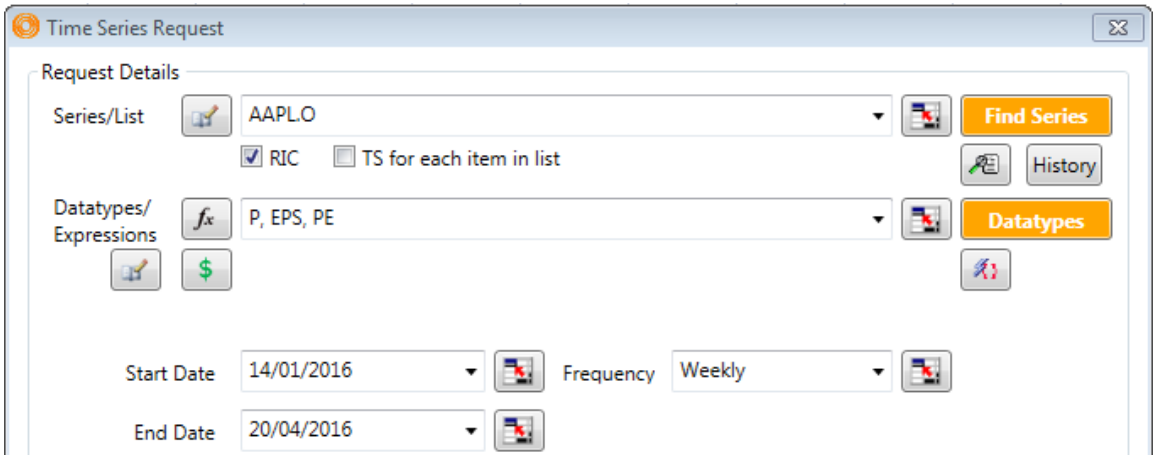


End Date



Frequency





Alternatively, you could key in the actual dates in the DD/MM/YY format as shown above. This would generate the table of figures as follows.

Name	APPLE	APPLE - EARNINGS PER SHR	APPLE - PER
14/1/2016	99.52	9.22	10.8
21/1/2016	96.3	9.22	10.4
28/1/2016	94.09	9.22	10.2
4/2/2016	96.6	9.42	10.3
11/2/2016	93.7	9.42	9.9
18/2/2016	96.26	9.42	10.2
25/2/2016	96.76	9.42	10.3
3/3/2016	101.5	9.42	10.8
10/3/2016	101.17	9.42	10.7
17/3/2016	105.8	9.42	11.2
24/3/2016	105.67	9.42	11.2
31/3/2016	108.99	9.42	11.6
7/4/2016	108.54	9.42	11.5
14/4/2016	112.1	9.42	11.9

4. Request List

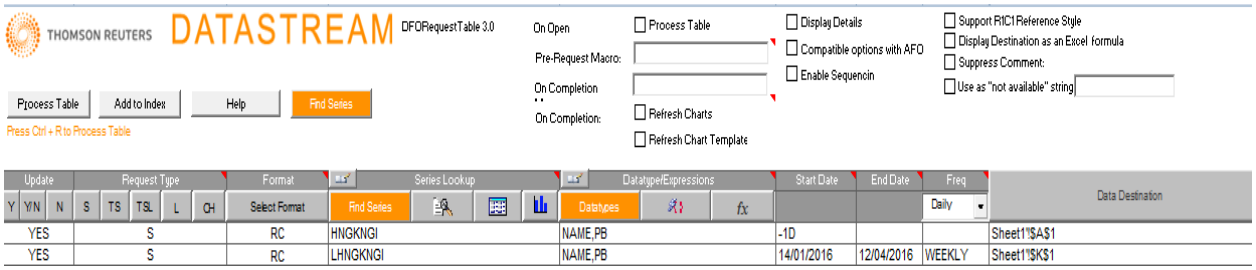
Constituent List of Equity Indices

Before discussing how to use the request list function on DataStream, let's explore how to view data for constituents of an index.

For example, the Hang Seng Index in Hong Kong trades with the DataStream code <**HNGKNGI**>. In order to generate the data for the list of constituents that make up the index, one can add an "**L**" in front of the DataStream code. Hence, the data for the constituents has the code <**LHNGKNGI**>

However, it would be good to note that DataStream cannot generate data for a time series constituent list (TS). Instead, utilise the TSL to create a list for constituent list.

Static Request (Constituent List)



Here are the steps in order to generate a request list as shown above.

1. In the first column, press **Y** for **Yes** to automatically update the table with the live values. Alternatively, press **N** for **No**.

2. In the second column, indicate the type of request necessary, by pressing the buttons in grey

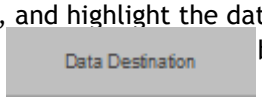
S - Static request
TS - Time series request
TSL - Time series for lists
L - List request
C – Chart request

3. In the third column, indicate the format required. (i.e. Row, Column = **RC**)

F - Custom Header
R - Row Titles
C - Column Titles
H - Request Headings
T - Transpose returned Data
$ - Include currency
X - Data only
E - Display expression 1st series as title
N – Display expression title as title
K - Hyperlink to Series metadata
B - Hyperlink to Datatype definition
M - Display Code
L - Latest Value First
Y - Display dates in Yearly Format
Q - Display dates in Quarterly Format

4. In the fourth column, indicate the datatype required. Use the Datatypes search if you are not sure what the shorthand is.

5. For a static request, the start date could be -1M or -1D or the specific date and no end date or frequency is required.

6. In order to generate the data in a separate sheet, create a new sheet, and highlight the data from the "Update" column to the "Data Destination Column". Next, press the 

button.

7. Lastly, press the 

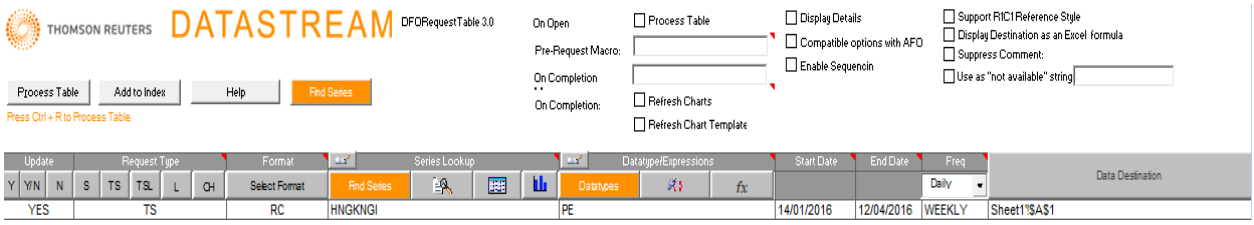
button for the table to be generated.

Type	NAME	PE			Type	NAME	PB
HNGKNGI	HANG SENG	10.28			70899K	AIA GROUP	42.7
					26030V	BOC HONG KONG (HDG.)	22.2
					35968W	BANK OF CHINA 'H'	3.11
					951410	BANK OF EAST ASIA	24.25
					31203N	BANK OF COMMS.'H'	4.87
					50520M	BELLE INTERNATIONAL HDG.	5.41
					31988F	CHINA CON.BANK 'H'	4.82
					998511	CITIC	11.84
					9507UZ	CHEUNG KONG PR.HDG.	46.15
					930492	CK HUTCHISON HOLDINGS	97.85
					887014	CHEUNG KONG INFR.HDG.	71
					929593	CLP HOLDINGS	63
					256842	CNOOC	7.29
					729076	CATHAY PACIFIC AIRWAYS	12.98
					28201C	CHINA LIFE INSURANCE 'H'	20.95
					315805	CHINA MRCH.HDG.INTL.	21.65
					867874	CHINA MOBILE	81.25
					316071	CHINA OS.LD.& INV.	22.4
					887449	CHINA RESOURCES LAND	18.1
					27962U	CHINA RES.POWER HDG.	13.96
					31162D	CHINA SHENHUA EN.CO.'H'	11.36
					280949	CHINA UNICOM (HONG KONG)	8.64
					314060	GALAXY ENTERTAINMENT GP.	21.55
					929610	HONG KONG AND CHINA GAS	14.56
					280037	HONG KONG EXS.& CLEAR.	179.7
					923812	HSBC HOLDINGS	56.2
					951407	HANG LUNG PROPERTIES	15.68
					929594	HANG SENG BANK	133.7
					997697	HENDERSON LD.DEV.	42.9
					675810	HENGAN INTL.GP.	66.2
					41271W	INDL.& COML.BK.OF CHINA 'H'	4.15
					755101	KUNLUN ENERGY	5.74
					362033	LENOVO GROUP	6.72
					315769	LI & FUNG	4.55
					298493	LINK RL.EST.INV.TST.	44.85
					264718	MTR	36.4
					29042F	CHINA MENGNIU DAIRY	11.28
					930223	NEW WORLD DEV.	6.81
					280366	PETROCHINA 'H'	4.48
					29091W	PING AN INSURANCE 'H'	36.3
					929595	POWER ASSETS HOLDINGS	70.35
					929146	SUN HUNG KAI PROPERTIES	89.35
					68341V	SANDS CHINA	22.25
					997310	SINO LAND	10.2
					266578	CHINA PTL.& CHM. 'H'	4.22
					916546	SWIRE PACIFIC 'A'	76.75
					29061M	TENCENT HOLDINGS	137
					865347	TINGYI CYMN.ISLE.HLDG.	9.23
					51780L	WANT WANT CHINA HOLDINGS	4.91
					929597	WHARF HOLDINGS	38.75

A table as follows would then be generated, with the P/E ratio in one column and the list of constituents and the price in another.

Time Request (Request Table)

To perform a time request, similar steps could be taken. However, constituent lists cannot be generated for time request lists.



Take note that for a time request, the start date, end date and frequency must be entered.

As a result, a table as follows can be generated.

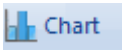
Name	HANG SENG - PER
14/1/2016	8.01
21/1/2016	7.51
28/1/2016	7.78
4/2/2016	7.81
11/2/2016	7.55
18/2/2016	7.89
25/2/2016	7.77
3/3/2016	8.17
10/3/2016	8.27
17/3/2016	8.84
24/3/2016	9.31
31/3/2016	10.15
7/4/2016	9.9

A request list is useful for consolidating all the inputs of every request created on the file and can allow users to quickly locate the data that they are looking for.

Even though there are additional functions for the different request types, we will not cover it in the course of this short introduction.

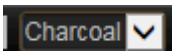
5. Charting

On DataStream, you would be able to plot charts of economic indicators and different datatypes of different instruments.

1. Press the 

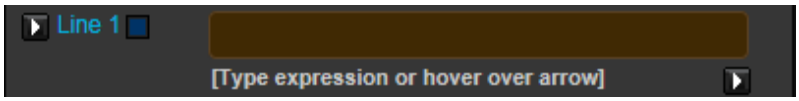
button in the Thomson Reuters DataStream tab. Alternatively, in the Eikon Toolbar, search **<CBOOK.**

2. Press the  to open a new chart

3. Change the colour scheme 

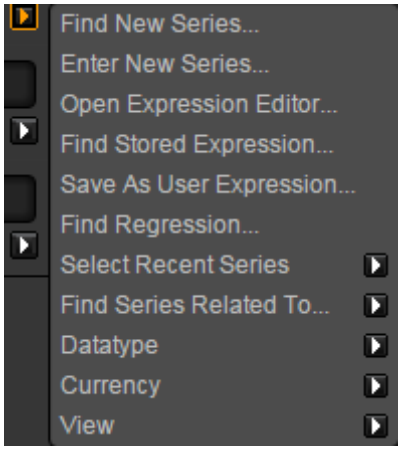
if necessary (Charcoal or Pearl)

4. In the following box, type the DataStream code, or a keyword to search for the instrument required.



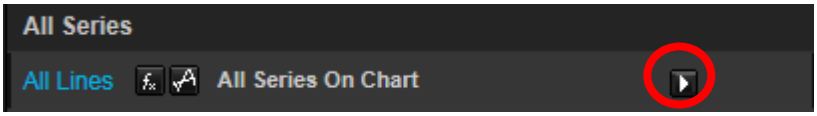
5. If the DataStream code is not known, press the small arrow at the bottom right of the screenshot, and press on **Find New Series**. Search for the necessary series as you have done for "Series/Lists" in the Static and Time Series Request.

6. To change the datatype for individual instruments, click on the arrow located next to the line in the formula



7. Select "Datatype" to change the specific instrument's datatype.

If you wish to change the datatype(s) for multiple instruments, you could do the following.



1. Firstly, press on the arrow and select **Datatypes**. After which, you could either manually enter the Datatype or use the **find new datatype** function.

2. Next, if you want to change the data of the charts, do it in the boxes as follows. You can either insert the period of time or type in the date in the DD/MM/YY format.

3. If you wish to view the data for the chart plotted, select the 

button at the top right hand corner of the page.

4. Sometimes, the data follow different axis (i.e. different currency or one being in absolute price and the other being in percentage). Hence, double click on the line in order to change the details of the line. Here, you can change the colour and weight of the line as well as the name in the legend.

5. If you wish to plot different information, such as the percentage year-on-year change, or the moving average, you could do so by pressing the  button below each line.

6. After plotting the line, save the chart by pressing the  button. (Note that unless you save the chart, you would be unable to export the chart)

7. After which, you are now free to export the chart to different Microsoft Office Applications (Word, Excel, and PowerPoint)

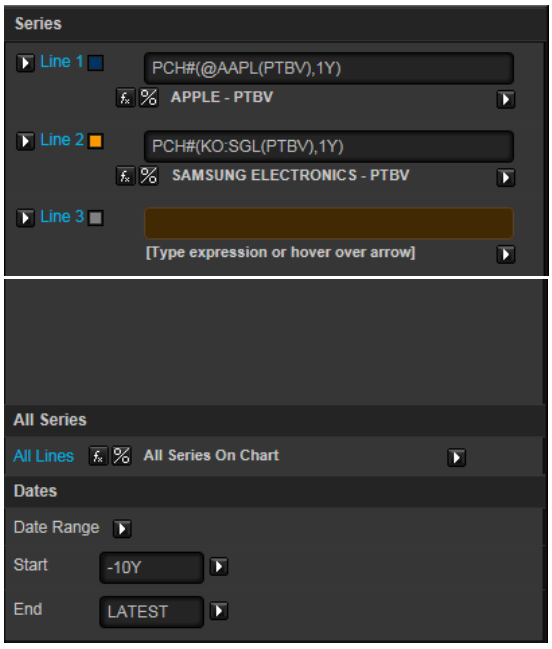
8. If you wish to update the charts in your report or presentations, you could go to the 

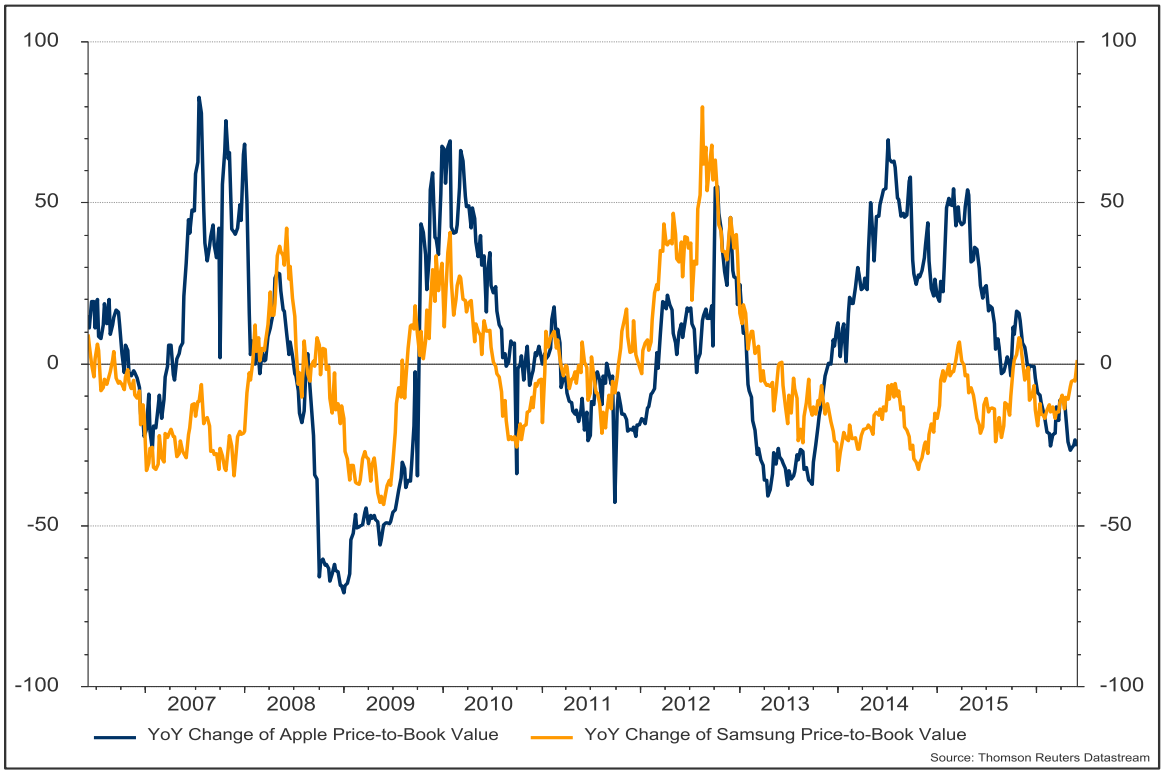
button in the Thomson Reuters tab to update all the charts or individual charts every time you open the file.

For example,

Plot the Year on Year change of the Price-to-Book Value of Apple and Samsung for the last 10 years.

Hence, you would key in the following and the chart will be produced.





Part 4: Cross Asset

1. Top News Application <TOPNEWS>

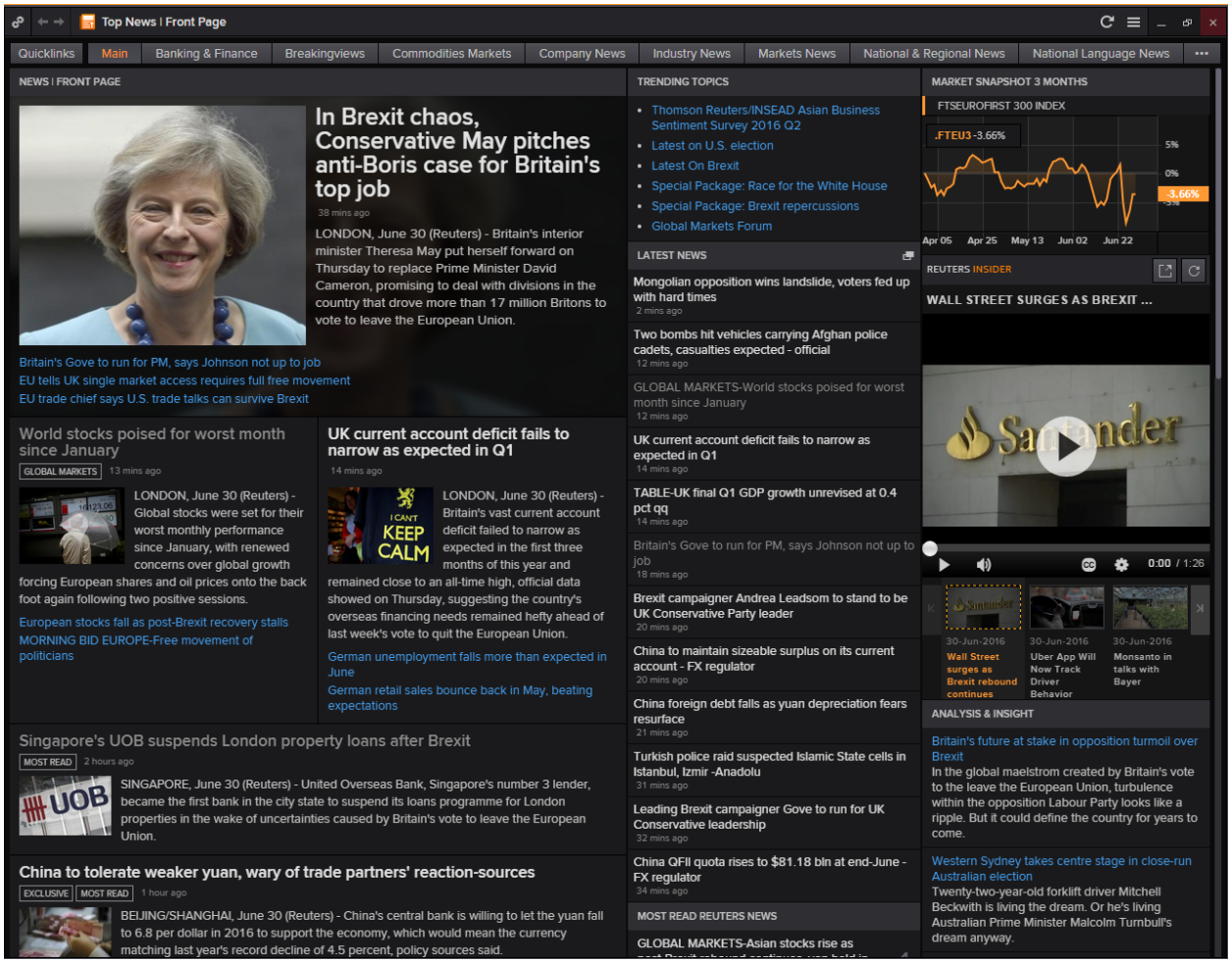
The Top News Application in Eikon would allow users to obtain a quick overview of the market news from both the main page as well as from different asset classes. From the top tab bar, the default page would be the “Front page” of the Top News app. However, from the different tabs, you could view news from the commodities markets, different companies and industries as well as by geographical zone.

While Top News provides objective news reporting, Views would provide users with opinionated based articles on certain topics.

In order to navigate to the following page,

In the Eikon Toolbar, search **<TOPNEWS>** in order to pull up the Top News Front Page as shown below.

Alternatively, on the Homepage, click the “News and Research” tab and select “Reuters Top News”.



2. Economic Monitor<EM>

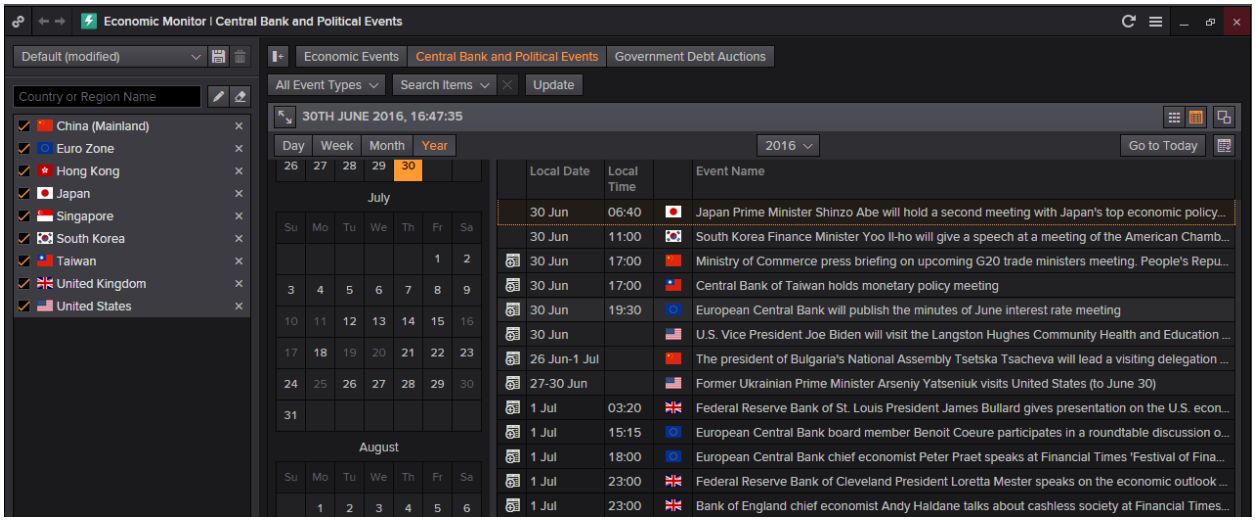
Users who are interested in the different economic news and events from a specific group of countries and markets would find the Economic Monitor Application useful. On the EM application, users can specify their set of countries by filtering them on the left hand bar.

From this, a list of Economic Events, Central Bank and Political Events as well as Government Debt Auctions would be generated.

Selecting any one event would pull up the related Reuters News at the bottom of the page.

In order to navigate to the Economic Monitor page,

In the Eikon Toolbar, search **<EM>** in order to open the Economic Monitor Application.

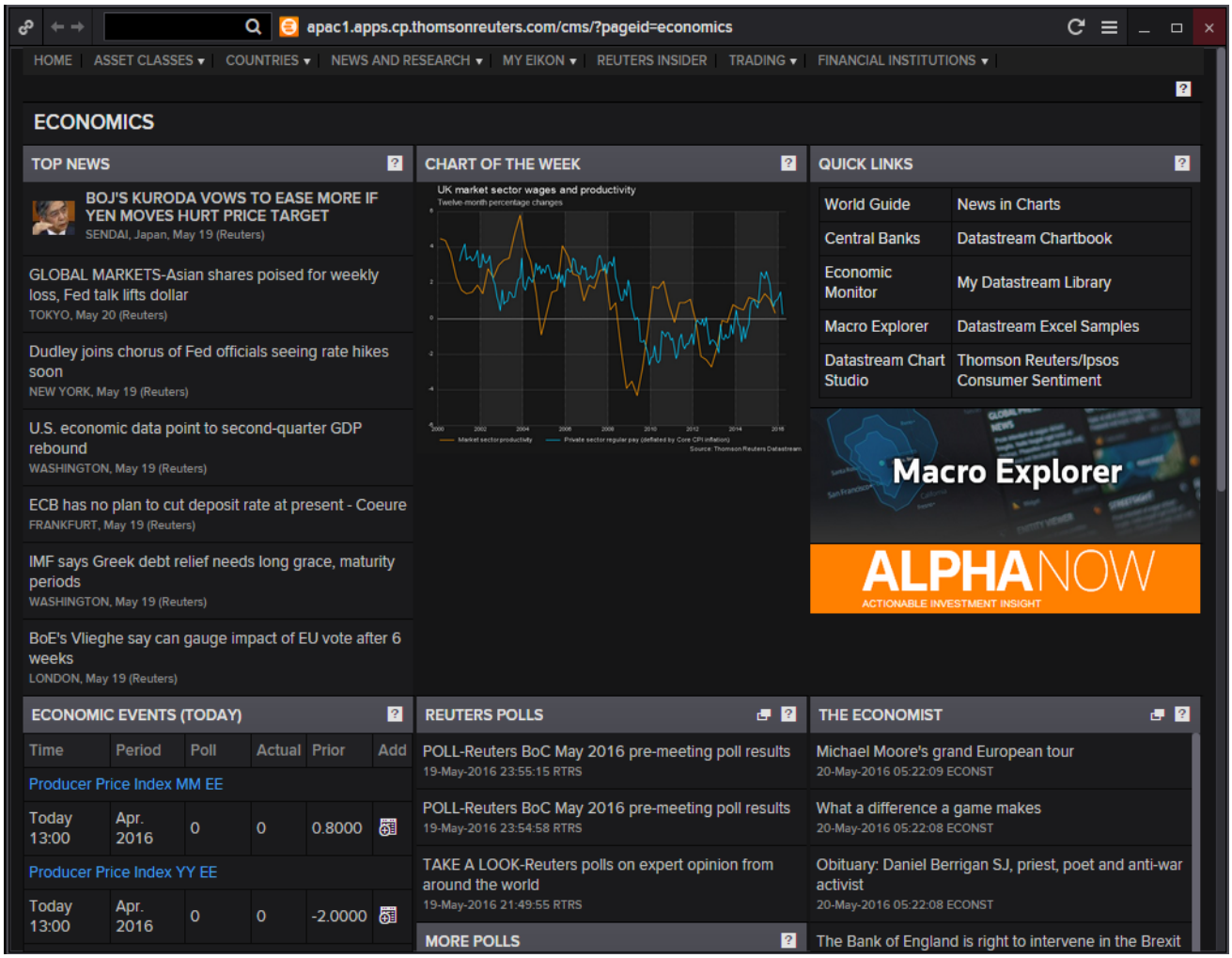


3. Economics Application <EC>

Investors who adopt a top-down approach to investing would often want to analyze the overall economic situation of the country before choosing whether to invest in that market.

Hence, the **Economic** Application would provide a general overview of the market.

To get to this page, type **EC** in the Eikon Toolbar.



Through this page, one can look through

- Important news that occurred in the markets,

- Recent Reuters Polls and

- Keep track of main economic events which will be occurring on that day.

4. Macro Explorer Application <MACROX>

Within the Economics page, there is a specific application by the name of Macro Explorer <MACROX> which can provide the user with a good and useful visual overview of how the market looks.

Through this page, different countries could be selected by choosing them on the map or through the search bar at the side. The graphs at the bottom will display the different indicators of the macro-economic situations in the countries.

The box on the left is where other countries can be selected.

The box on the upper right allows different functionalities such as

- World Map

- Moving Grid

- Scatter Plot

- Table

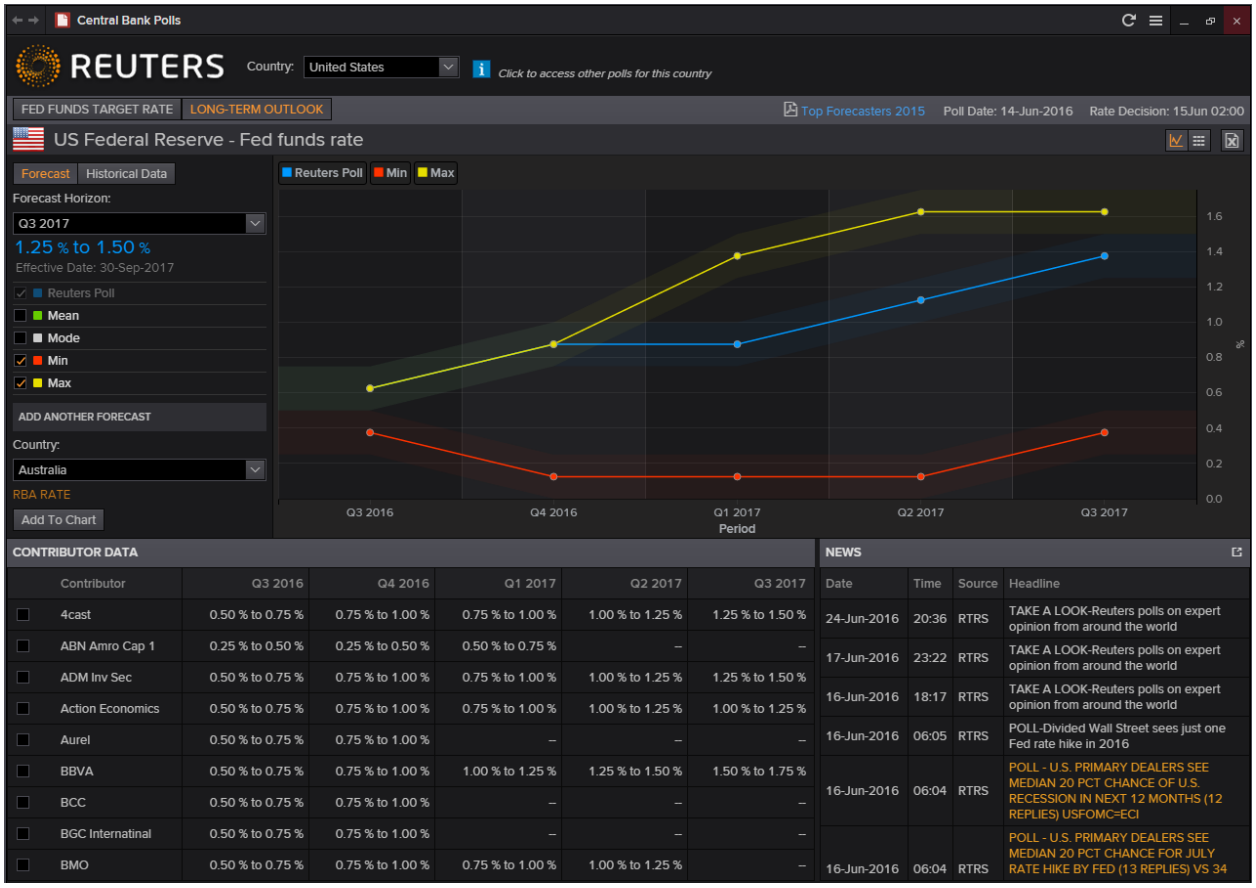
5. Central Bank Poll <CBP>

The Central Bank Poll application would allow users to view a forecast of the central banks' likely interest rate, providing a long-term outlook on the bank's decision.

Most countries have only a long-term outlook where different analysts' opinions are collated and displayed in the form of a line chart. In addition to the Reuters Poll in blue, users can also add in lines depicting the max and min based on estimates as well as a mean and mode figure.

However, due to the high interest placed on the Fed Funds Target Rate, there is also a poll collected for those figures and hence, the US Federal Reserve's page also has a Fed Funds Rate estimate provided.

In the Eikon Toolbar, search **<CBP>** to open the application.



Contributor	Q3 2016	Q4 2016	Q1 2017	Q2 2017	Q3 2017
4cast	0.50 % to 0.75 %	0.75 % to 1.00 %	0.75 % to 1.00 %	1.00 % to 1.25 %	1.25 % to 1.50 %
ABN Amro Cap 1	0.25 % to 0.50 %	0.25 % to 0.50 %	0.50 % to 0.75 %	–	–
ADM Inv Sec	0.50 % to 0.75 %	0.75 % to 1.00 %	0.75 % to 1.00 %	1.00 % to 1.25 %	1.25 % to 1.50 %
Action Economics	0.50 % to 0.75 %	0.75 % to 1.00 %	0.75 % to 1.00 %	1.00 % to 1.25 %	1.00 % to 1.25 %
Aurel	0.50 % to 0.75 %	0.75 % to 1.00 %	–	–	–
BBVA	0.50 % to 0.75 %	0.75 % to 1.00 %	1.00 % to 1.25 %	1.25 % to 1.50 %	1.50 % to 1.75 %
BCC	0.50 % to 0.75 %	0.75 % to 1.00 %	–	–	–
BGC Internatinal	0.50 % to 0.75 %	0.75 % to 1.00 %	–	–	–
BMO	0.50 % to 0.75 %	0.75 % to 1.00 %	0.75 % to 1.00 %	1.00 % to 1.25 %	–

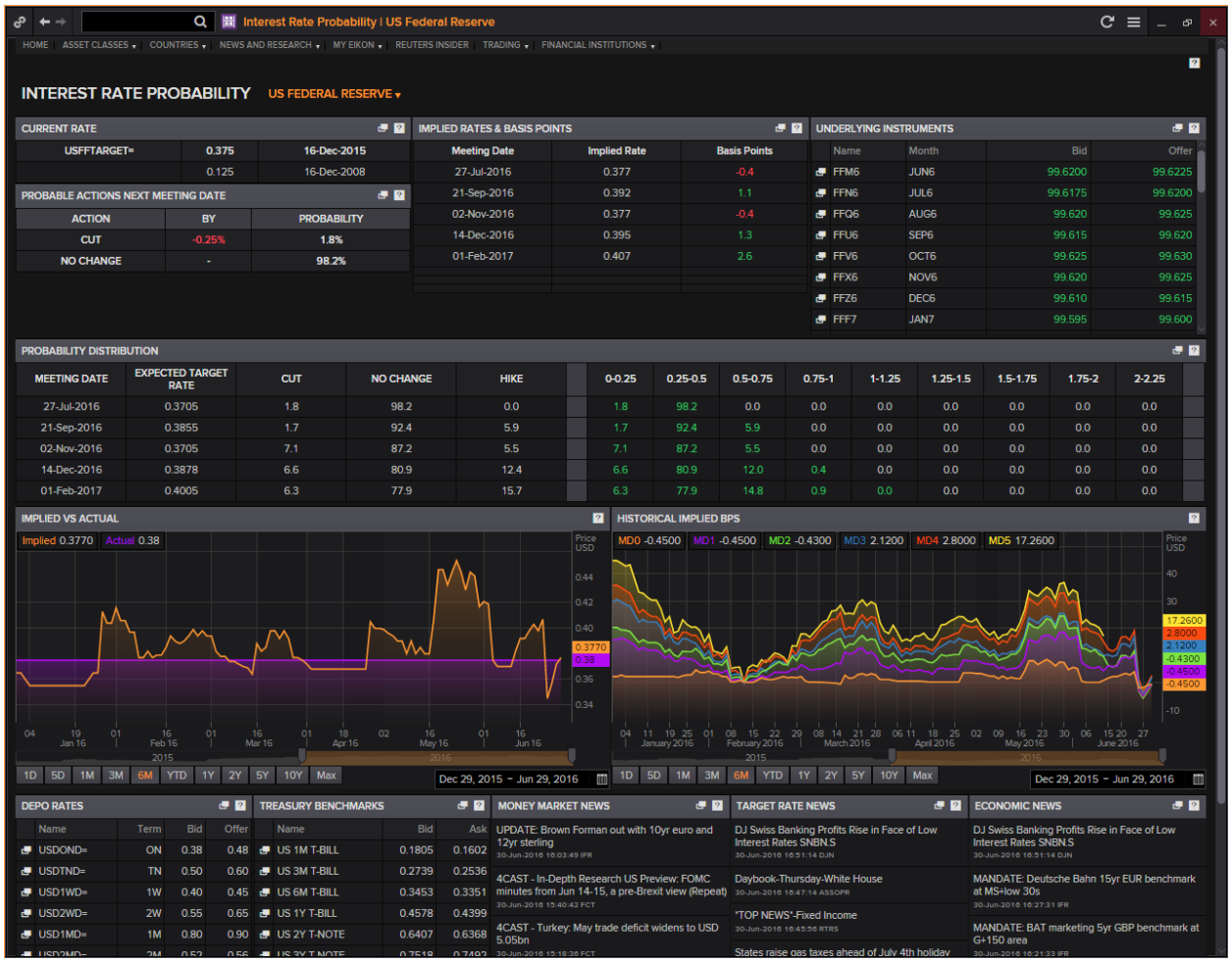
Date	Time	Source	Headline
24-Jun-2016	20:36	RTRS	TAKE A LOOK-Reuters polls on expert opinion from around the world
17-Jun-2016	23:22	RTRS	TAKE A LOOK-Reuters polls on expert opinion from around the world
16-Jun-2016	18:17	RTRS	TAKE A LOOK-Reuters polls on expert opinion from around the world
16-Jun-2016	06:05	RTRS	POLL-Divided Wall Street sees just one Fed rate hike in 2016
16-Jun-2016	06:04	RTRS	POLL - U.S. PRIMARY DEALERS SEE MEDIAN 20 PCT CHANCE OF U.S. RECESSION IN NEXT 12 MONTHS (12 REPLIES) USFOMC=ECI
16-Jun-2016	06:04	RTRS	POLL - U.S. PRIMARY DEALERS SEE MEDIAN 20 PCT CHANCE FOR JULY RATE HIKE BY FED (13 REPLIES) VS 34

6. US FED Interest Rate Probability

For users who require more detailed information than just the figures from the CBP Application can refer to the following application for a more detailed probability breakdown of expected Fed rate hikes or cuts.

In the following application, the page shows the current target rate as compared to a historical figure. In addition to that, a table displaying the probable actions for the next month (e.g. cut or no change) would also provide a concise overview of how the Fed is likely to vote at the next meeting.

In the Eikon Toolbar, search **<US FED INTEREST>** and select the application from the drop down menu bar.



7. Economic Indicator Poll <ECOP>

Another poll that may be useful to users monitoring the different economic markets would be the Economic Indicator poll. Using this page, users are able to view estimates of different economic indicators of different markets.

By selecting the country as well as the indicator (e.g. Federal Budget), users can view the Reuters Poll (consolidated from different polls) as well SmartEstimate and the Actual figures. The line chart below shows how the estimates and polls have fared in the past as compared to the actual figures that have been reported.

In order to reach the following page,

In the Eikon toolbar, search **<ECOP>**.

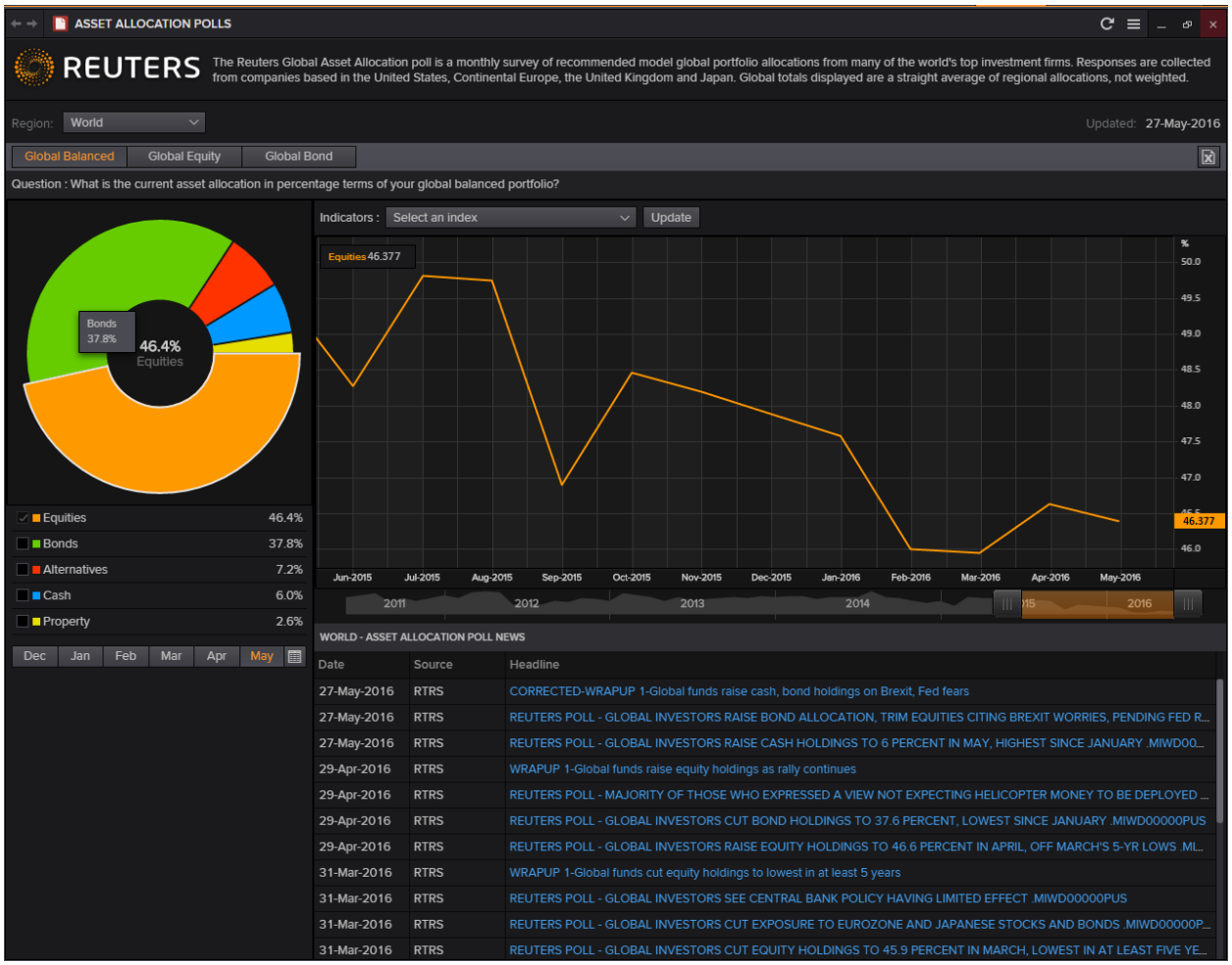
8. Asset Allocation Poll <AAP>

The Reuters Global Asset Allocation poll is a monthly survey of recommended model global portfolio allocations from many of the world's top investment firms. Responses are collected from companies based in the United States, Continental Europe, the United Kingdom and Japan. The Global totals displayed are not weighed but are a straight average of regional allocations.

On this page, there is a consolidated "World" allocation for

1. Global Balanced – to show the allocation between equities, bonds, alternatives, cash and property
2. Global Equity – to show the allocation amongst different geographical areas for equities
3. Global Bonds – to show the allocation amongst different geographical areas for bonds

Alternatively, you are able to view the same breakdown above for different countires, mainly Europe, Japan, United Kingdom and the United States.



9. Correlation Matrix <CORR>

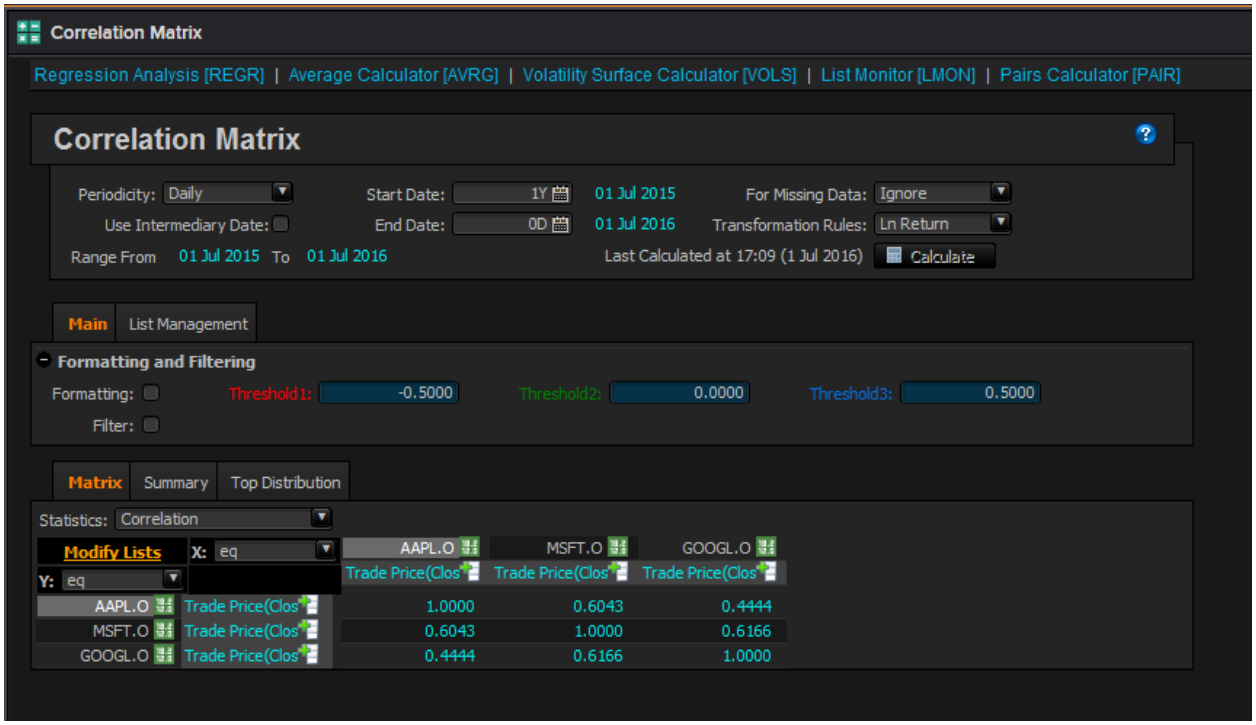
The correlation matrix allows users to measure the change in different indicators (such as price, total return etc) of one asset against another for any one period.

Using this calculator, the correlation, R-squared, covariance, beta and alpha can be measured. For correlation in particular, a figure closer to 1 would indicate a higher amount of positive correlation. On the other hand, a figure closer to -1 would indicate a higher amount of negative correlation.

1. In the Eikon toolbar, search **<CORR>** in order to open the application.
2. Under “List Management”, create a list of equities, indexes or other instruments you would like to compare.
3. In the “Main” page, adjust the following parameters

    - Periodicity: Daily etc.
    - Start Date
    - End Date

4. Adjust the lists X and Y and press “Calculate” in order to generate the results
5. Also, you can change the Statistics and the Fields if necessary



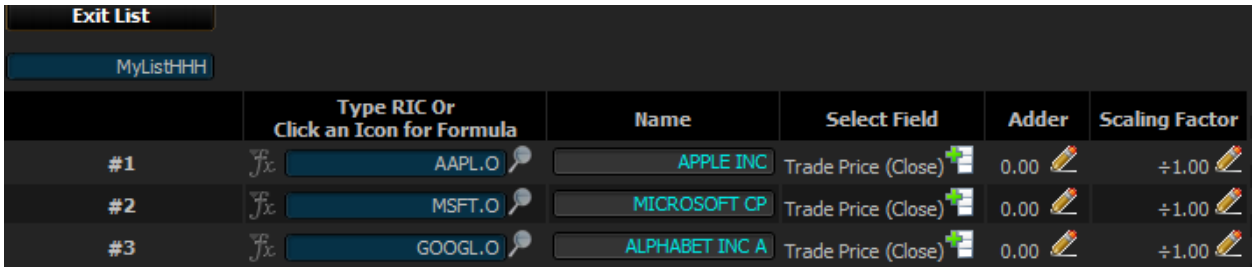
10. Average Calculator <AVRG>

Using the Average Calculator application, users are able to compare the average prices or volatilities across different time periods for your specified list of instruments.

In order to pull up a similar list as shown below,

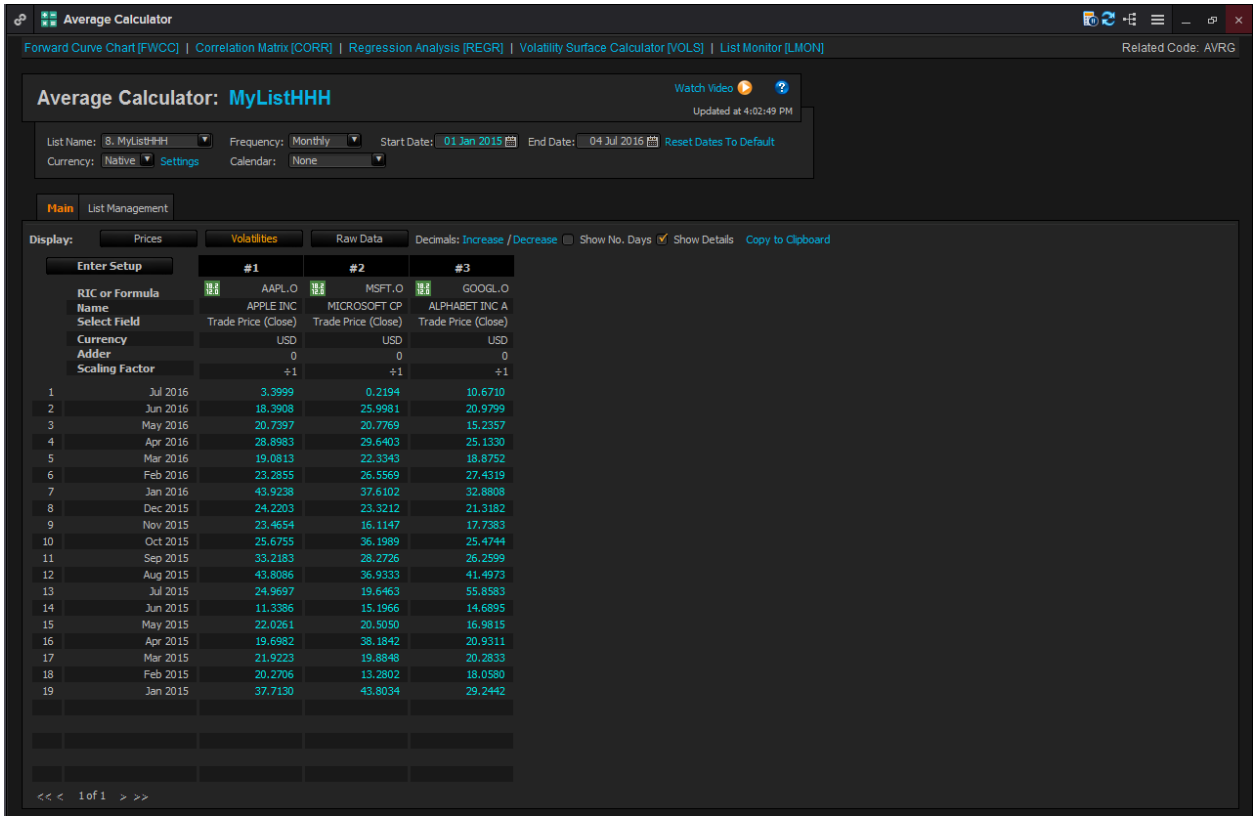
1. In the Eikon Toolbar, search **<AVRG>** to open the application

2. Under “List Management”, specify the different instruments that you wish to search for.



3. Here, you can view the average prices and volatilities over different time periods for the specified “Start Date” and “End Date” that you have chosen at the top of the page.

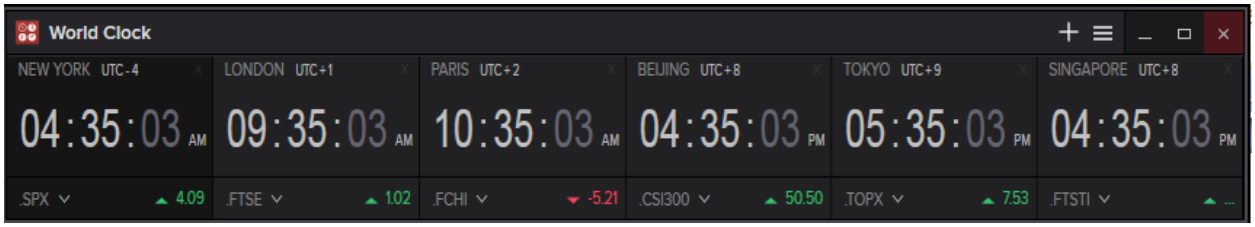
4. Also, different frequencies can be selected.



11. World Clock

The World Clock application allows users to view the different time zones available as well as its respective equity indexes. This allows users who trade in different markets to monitor both the times as well as the market conditions.

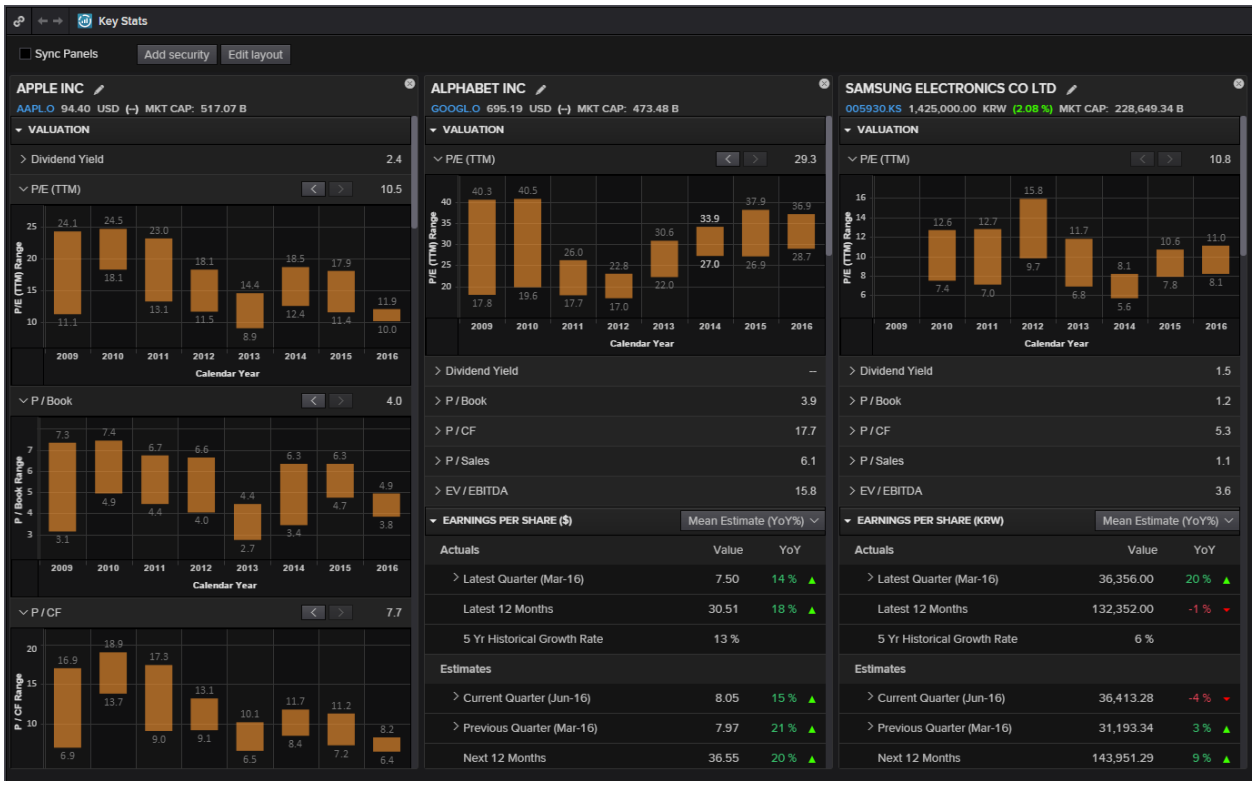
In the Eikon Toolbar, search **<CLOCK>** and select from the drop down menu.



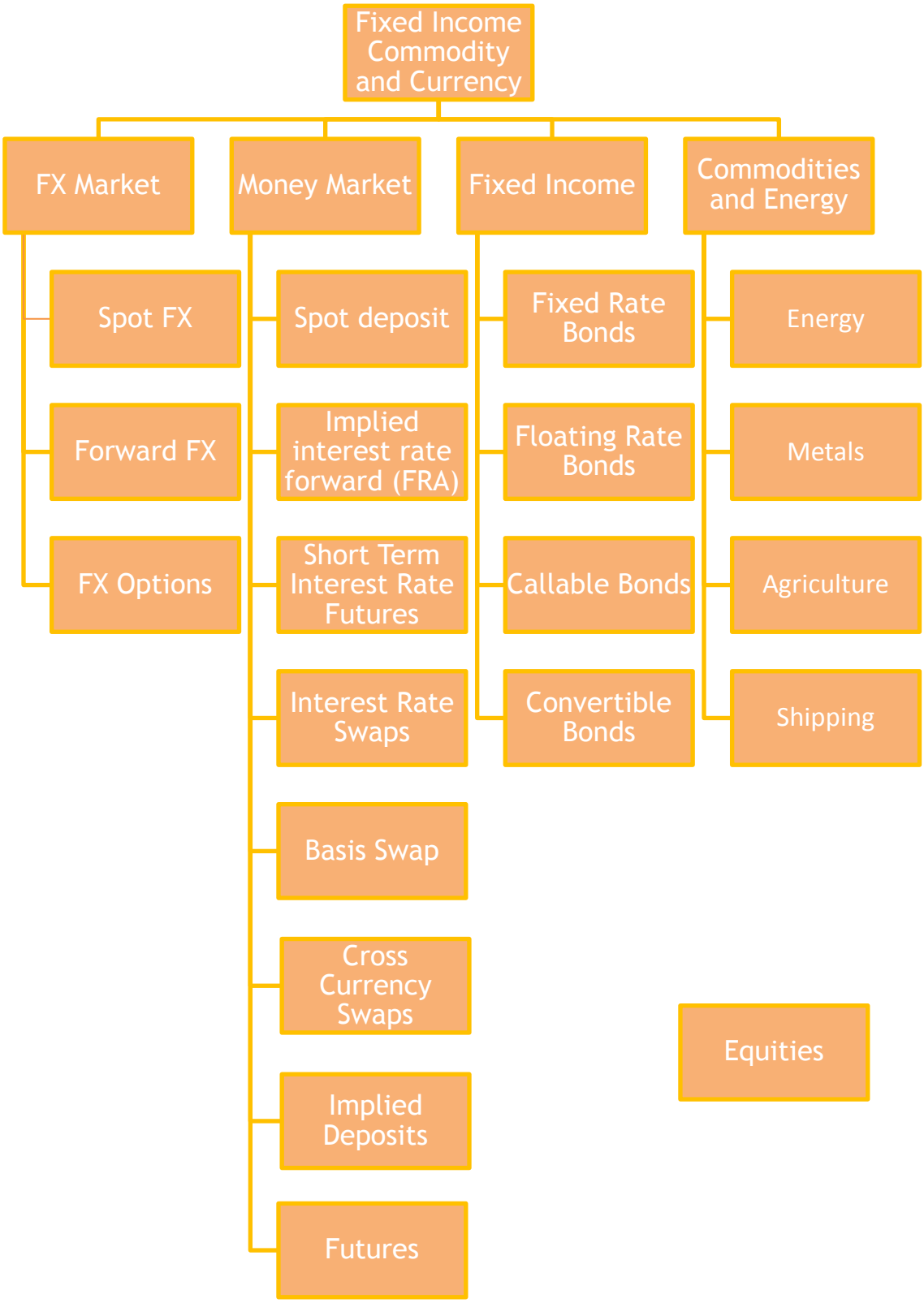
12. Key Stats <KEYST>

The KeyStats page allows users to compare a maximum of three different securities and to compare them across different valuation methods.

In the Eikon Toolbar, search **<KEYST>** and choose the three securities to compare.



List of Instruments to be Covered



Part 5: Foreign Exchange Market

THOMSON REUTERS
EIKON™

Eikon shortcuts: FX

REAL TIME MONITORING	
ALT	Alert Manager
OPW	Option Watch
Q	Quote
QL	Quote List
QLI	Quote Line
SDB	Sidebar
TAS	Time & Sales
TICK	Ticker

NEWS	
FXBUZZ	FX Buzz
NEWS	News
TOPNEWS	Top News

CHARTING	
CHRT	Chart App
ECOC	Economic Indicator Chart
FXFC	FX Forecast Chart
FXVO	FX Volatility Chart
TEAC	Technical Analysis Chart
VOLC	Volatility Chart

ANALYTICS AND CALCS	
AVRG	Average Calculator
BRKD	Broken Dates
COPP	Currency Options Portfolio
COPS	Currency Options Strategy
COPT	Currency Options
CORR	Correlation Matrix
DEAN	Deposit Analysis
DEFO	Deposit vs FX Forwards Overview
FRAA	FRA Arbitrage Calculator
FRAP	FRA Pricing
FXBP	FX Spot Arbitrage
FXCM	FX Cross Matrix Calculator
FXCT	FX Carry Trade
FXCV	Best FX MM Curve
FXFT	FX Forwards from Futures
FXOC	FX Options Calculator
FXVE	FX Volatility Explorer
NDFX	Non-Deliverable Forwards Calculator
OISC	Overnight Index Swap
PARF	Par Forward Calculator
REGR	Regression Analysis
SPO	Swap Points and Outrights
SPOZC	Swap Points from ZC

MARKETS	
BGC	BGC Market Data Broker Guide
CIG	Currency Index Guide
EE	Economic Events
FXALL	Fxall
FXG	Foreign Exchange Guide
FXHEAT	FX Volume Heatmap
FXMM	FX & Money Views
FXOTCG	FX Options Guide
FXPOLL (e.g. "EUR= FXPOLL")	FX Polls View
FXTFOG	Foreign Exchange Traded Futures and Options Guide
HOL	World Exchange Holidays
HOME	Home page
ICAP	ICAP Guide
NDFO	Non-Deliverable Forwards and Outrights Guide
NDFV	NDF View
SPOTG	Spot Guide
TPB	Tullett Prebon Broker Guide

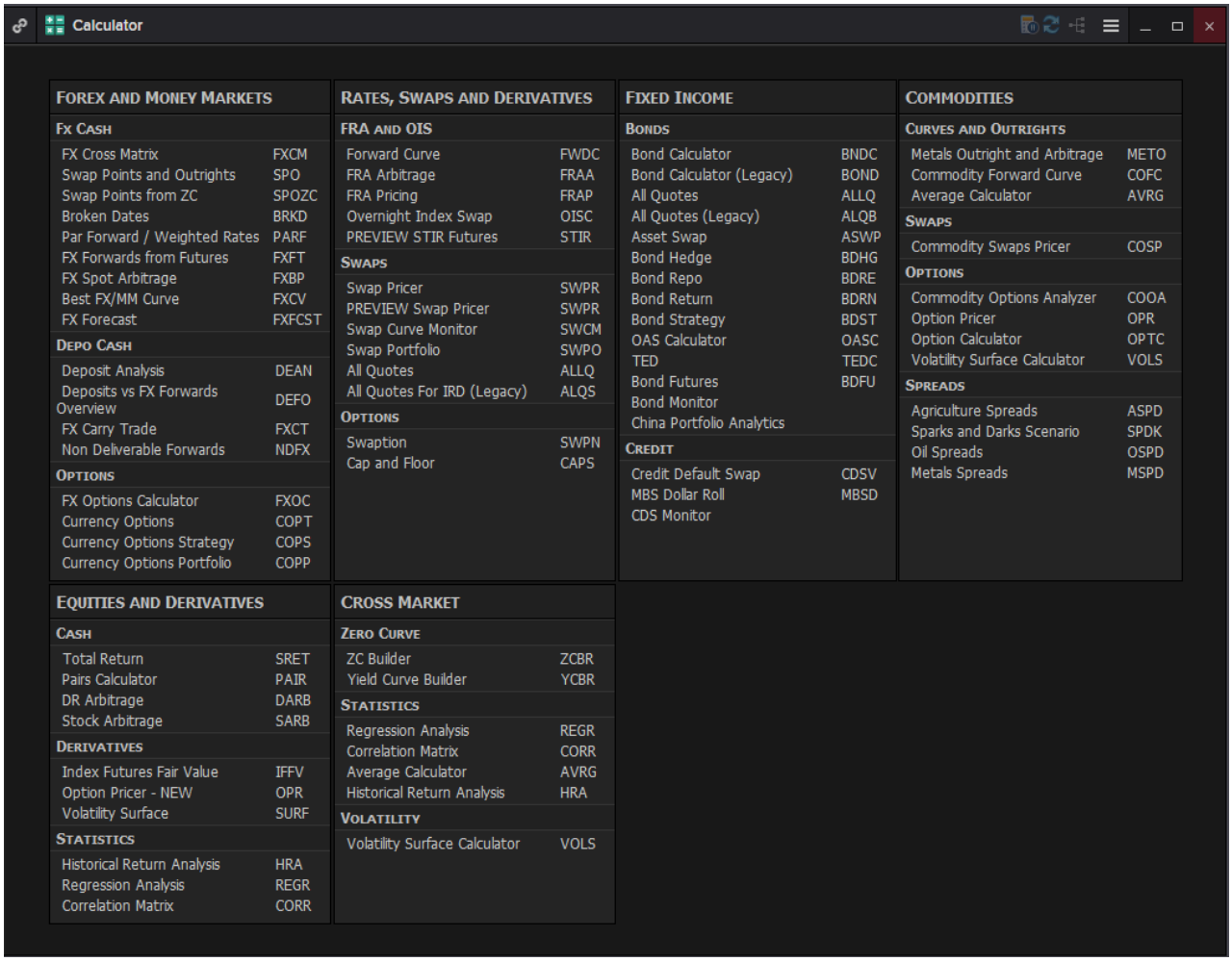
SEARCHES	
ANSWERS	Eikon Answers
CURVESRCH	Curves – Advanced Search
FXMMSRCH	Money/Foreign Exchange – Advanced Search
SRCH	Advanced Search
TICK	Ticker

HELP	
FAQ	Frequently Asked Questions
HELP	Online Help

Calculator <CALC>

When conducting analysis, for different types of instruments such as Foreign Exchange, Bonds and Equities, the Calculator app in Eikon would come in useful.

To navigate to the page, type **CALC** in the Eikon Toolbar.



The Calculator is split up into different sections which would make navigation easier.

For example, when researching on the foreign exchange and money markets, some common functionality would be

1. Swap points and outrights
2. Depo analysis
3. Non Deliverable Forwards
4. FRA Pricing
5. Swap Pricer
6. Zero Curve Builder

1. Overview of Foreign Exchange Market

The foreign exchange market is used to facilitate the trading of currencies. This includes the buying , selling and hedging of foreign exchange exposure of foreign and domestic currency, both at spot (current) and forwards (in the future).

Main participants of this market include large international banks which would partake in this trading on behalf of their clients and for the banks themselves. Others include businesses, financial institutions, governments, investors and individuals who use the FX markets to adjust their currency holdings.

Securities traded on the FX market are usually highly liquid and have short maturities. Thus, many investors view this as a safe short term market.

There are two main ways to trade: **Over-the-counter (OTC)** market and the **Exchange-traded market.** The OTC market is usually privately traded and contracts can be customized. On the other hand, Exchange-traded markets are usually formalized and the governments are usually involved.

Information on the FX market can be derived from:

Press function key **F4** for quote object, enter **MONEY**

We will be discussing the following,

1. FX Spot Transactions

2. Deliverable FX Outrights and Non Deliverable FX Outrights

2. FX Spot Transaction

When discussing the foreign exchange market, there are two main transactions which can occur. **1. Foreign Exchange Spot** and **2. Foreign Exchange Forward**

Foreign Exchange Spot Transaction

A FX spot transaction is an agreement between two parties to exchange two different currencies at an agreed exchange rate for settlement in usually 2 business days time.

For example, A client wishes to sell 1 million USD at X SGD per USD.

The currency pair would hence be named **USDSGD** and the bank would then quote the **bid price** of the USDSGD.

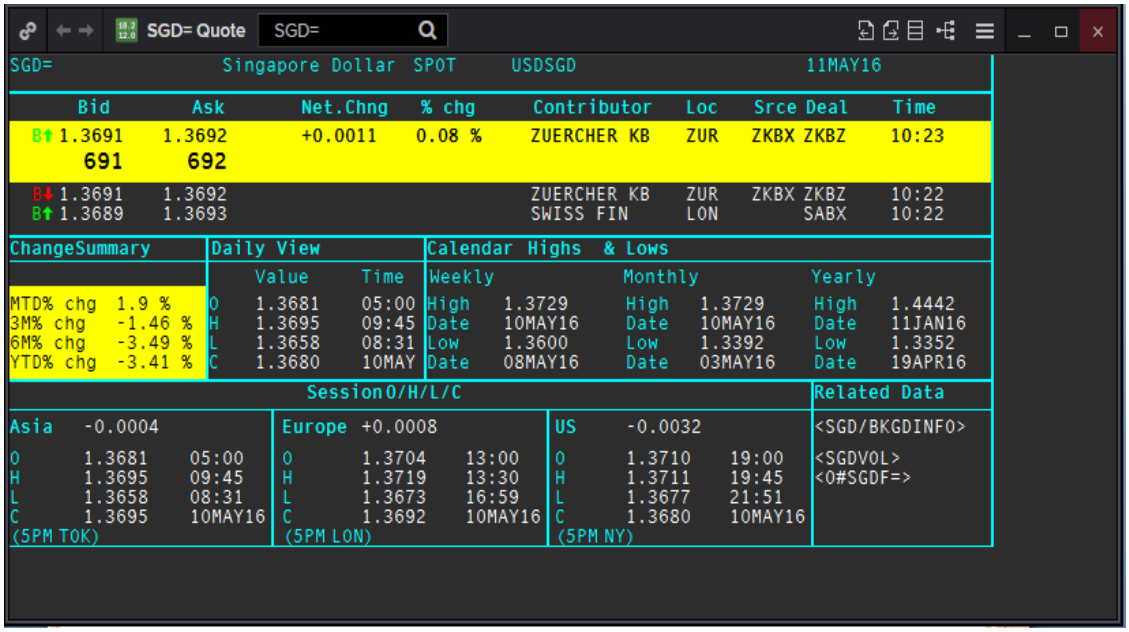
USDSGD: This money market convention is used to denote "1 USD in SGD" or "in SGD per USD"

Bid price is used here as the banker would be "buying" USD from the client and "selling" SGD and hence the indicative bid price of USDSGD would be used.

In order to retrieve the bid price from Eikon, the bank does the following.

Press F4 in Eikon to open the Quote app.

Key in **<SGD=>** in the search bar to search for <USDSGD>



3. FX Outrights Transactions

FX Outrights are binding contracts in the FX market that lock in the exchange rate for the purchase or sale of a currency on a future date. This actually allows investors to lock in an exchange rate for them to buy or sell a currency in the future, or for them to **hedge** a future FX risk exposure.

A FX outright is often preferred over a FX future since FX Outrights can be customized for a particular amount and delivery period; with the contents of the contracts are usually agreed upon before the start of the contract.

When deciding whether to enter into a forward outright, a proposition could be set out in front of a client.

For example, a client wishes to know whether to lock in a forward contract for USDSGD or to wait and buy at spot price later.

The banker can then use the following tools in **Eikon.**

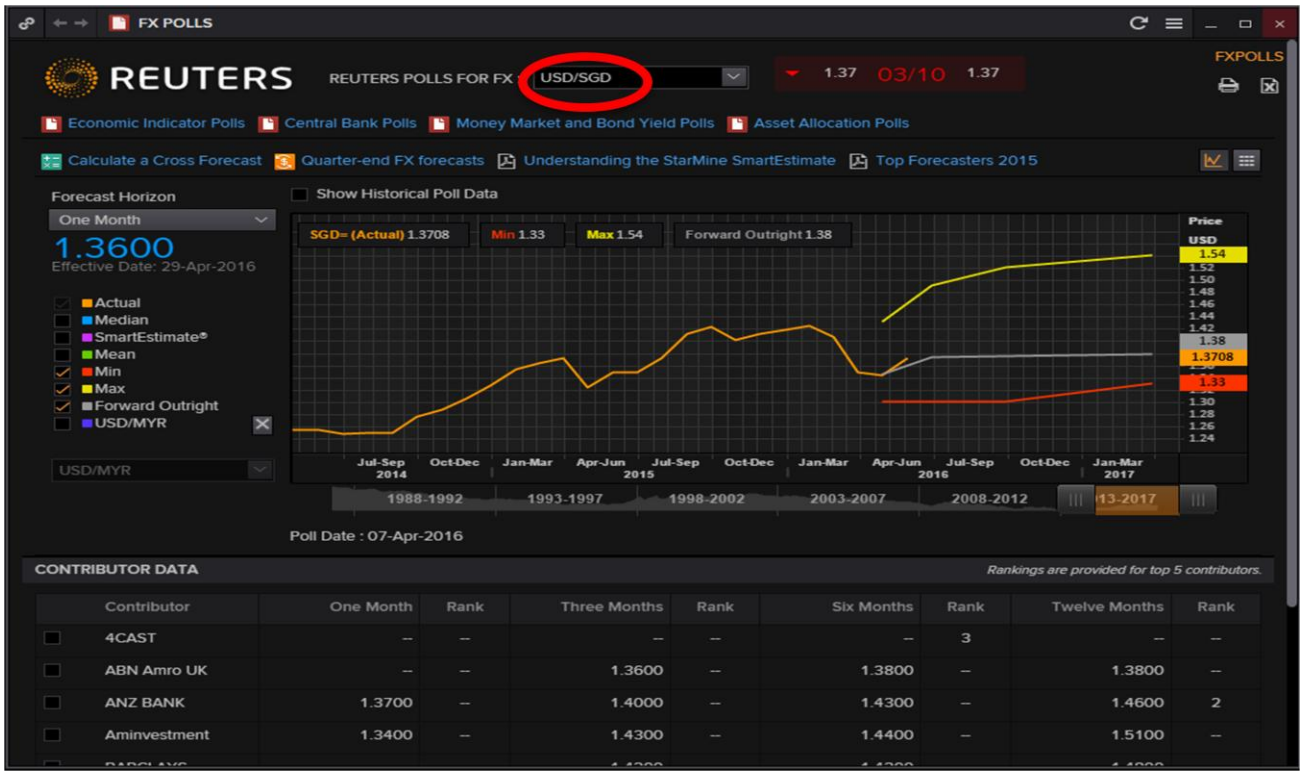
1. In the Eikon Toolbar, type **<FXPOLLS>**

2. Select the currency pair required, i.e. **<USD/SGD>**

3. If any specific contributor is favoured, a line representing their forecast could be added by clicking the box next to their name.

A sample proposition could be:

In order to lock in a forward rate to reduce upside risk, which is forecasted to be high, a forward contract could be purchased today.



3a. Deliverable FX Outrights

Forward Transactions are all transactions which is settled on any date other than **S** (spot value date).

In a FX Outright or Swap transaction, two trades take place, one on the near date (usually spot) and the second on the far date.

There are two main types of FX Outrights, one being **Deliverable FX Outrights** and the second being **Non-Deliverable Forwards.**

We will first explore the **Deliverable Forwards.**

Terminology

As part of the Money Market (MM) Convention, there are certain phrases often used:

1. **Spot FX**/FX spot,

2. **Forward FX**/ FX outrights

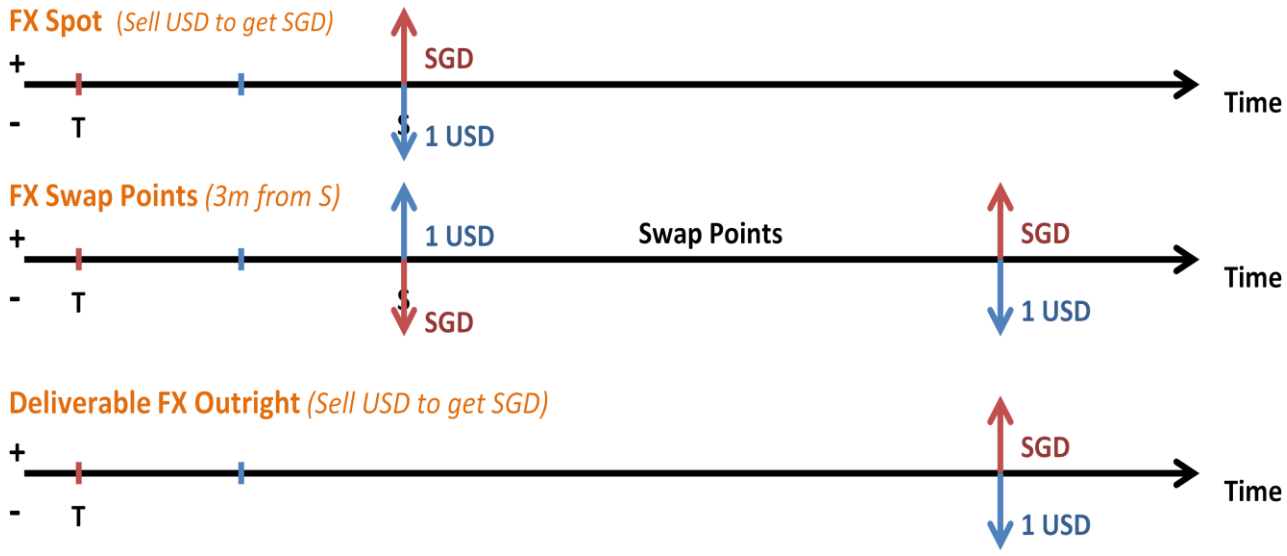
3. FX forward/FX swap.

While the first 2 denotes the valuation of FX prices at spot value date (spot FX) and at a date other than spot value date but agreed today (Forward FX), the third refers to swap points (FX Forward).

Swap points are mainly influenced by interest rates and would be the figure that bankers refer to when making quotes for forward transactions.

For example, a client wishes to sell 1 million USD with SGD, 3 months from today.

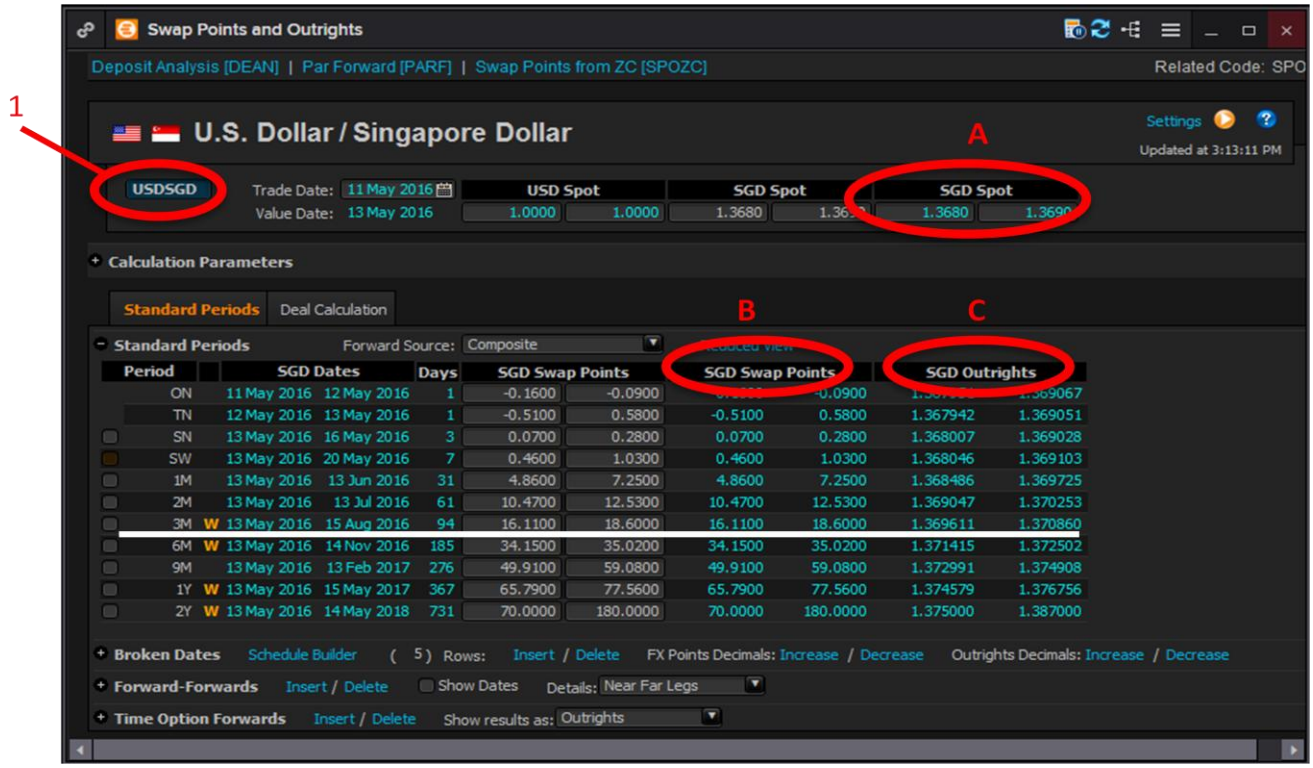
The banker would hence refer to two sets of data; **1. FX spot 2. FX Swap Points** in order to determine the Deliverable FX Outrights. Graphically, we would derive the following,



Thus, the deliverable FX outright 3 months from the spot date is effectively the **sum of the FX Spot Price and FX Swap Points.**

In order to perform the above scenario with Eikon, there are two methods to do so.

In the Eikon Toolbar, search **<SPO>**



1. Key in the currency pair at ***1*** *(i.e.* ***<USDSGD>)***
2. Locate the necessary period from the first column (i.e. 3M for 3 months)
   There are 3 main bid-ask figures which would be of interest.

Figure	What it is	Alternative Methods to Obtain it
A	FX Spot Price	F4 > Search for spot price of currency e.g. **<SGD=>**
B	FX Swap Points	F4 > Search for forward swap points/rates e.g. **<SGDFWD=>**
C	FX Outrights	F4> Search for **<0#SGDF=>** or type **<SGDF=>** and press **F3**

Recall earlier that Deliverable Outrights was found to be equal to the sum of the FX spot price and the FX swap points.

However, is this always true?

The answer is *Yes* and *No*. It depends on two factors.

1. Scaling Factor
2. Forward Delivery Date

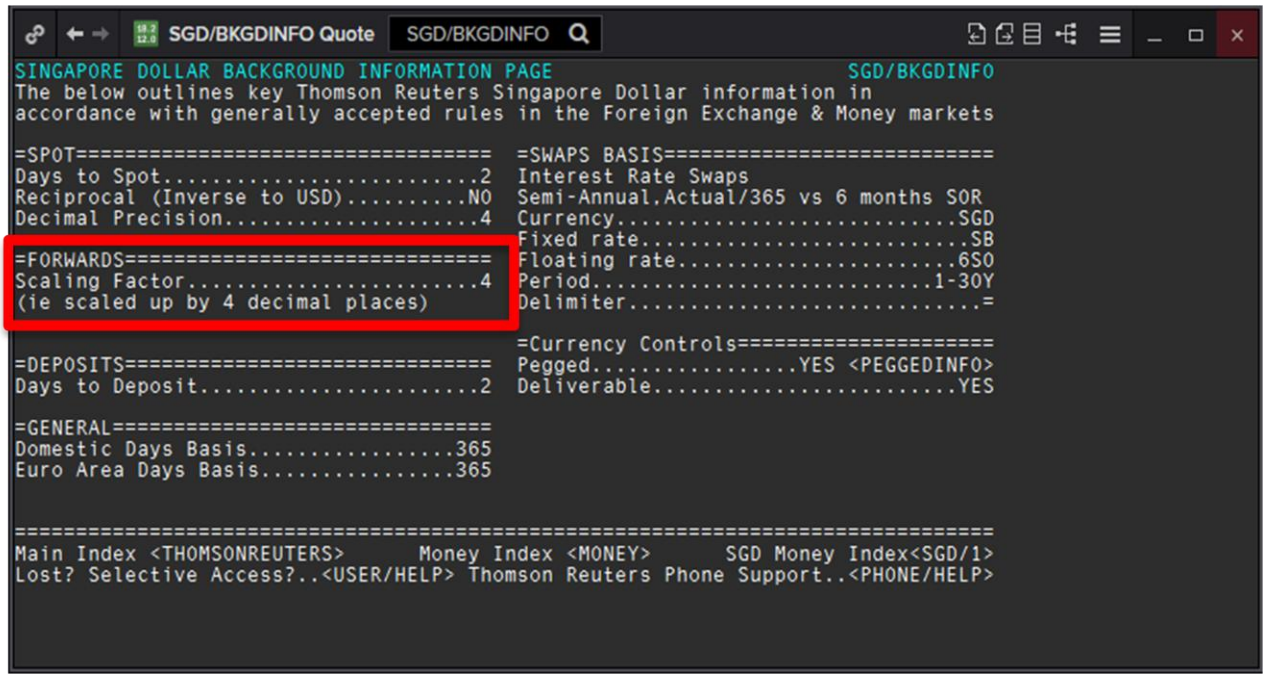
Scaling Factor

In the previous screenshot, the resultant outright price of USDSGD was not the sum of the corresponding FX spot price and FX swap points. This is due to the scaling factor of the SGD.

How to find the scaling factor of a currency?

1. In Eikon, press **F4**

2. Type in the country name (i.e. **<Singapore>** and select **<Background Info>)**



Here, Singapore has a scaling factor of 4 decimal places.

Hence, the following equation can be derived.

Deliverable FX Outrights = FX Spot Price + FX Swap Points / factor (if any)

Note:

Days to deposit (whether it is 1 or 2 days from trade date to spot date) can be found too.

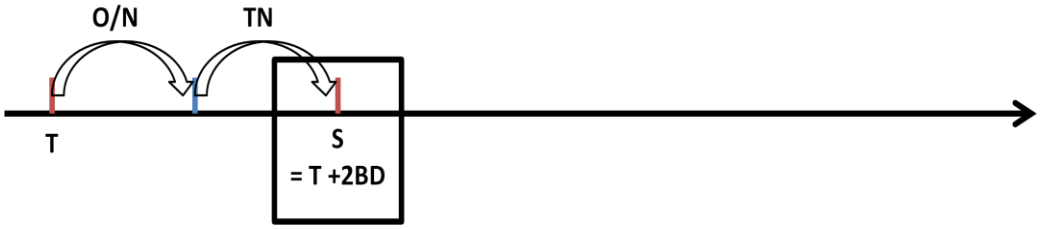
Forward Delivery Date - Money Market Convention

In order to determine whether the deliverable FX outright is always the sum of the FX spot price and the FX swap points, we have to look at the **forward delivery date**.

As mentioned previously, in most markets, spot value date, **S** would usually be two business days (2BD) after the trade date, **T**.

FX Forward Transactions are therefore transactions which are settled on all dates but the spot value date and can be split into two categories: **Pre-Spot Value Dates** and **Post-Spot Value Dates.**

Pre-Spot Value Dates



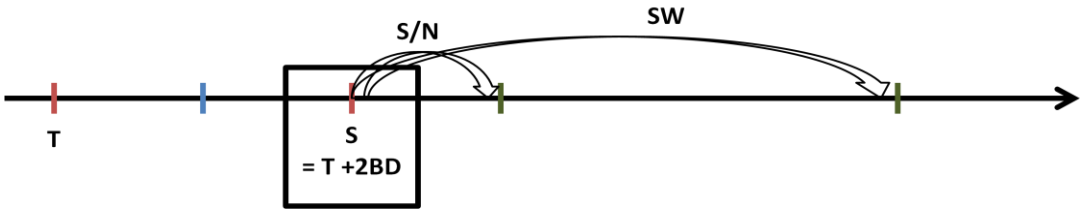
There are two different periods that can occur: Overnight (ON) and TomNext (TN)

Both are single day periods and can be better understood using a table. One important thing to note is that all dates prior to **S** are counted from **T** (trade date).

Assuming the trade date (today) is the 12th of January 2016.

Notation	Settlement Date	Money Market Convention
ON (Overnight)	12	From 12 to 13
TN (Tomorrow Next)	13	From 13 to 14
S (Spot Value Date)	14	14th

Post-Spot Value Dates



All Post-spot value dates take reference from the spot value date. There are two special phrases that may occur: Spot Next (SN) and Spot Week (SW):

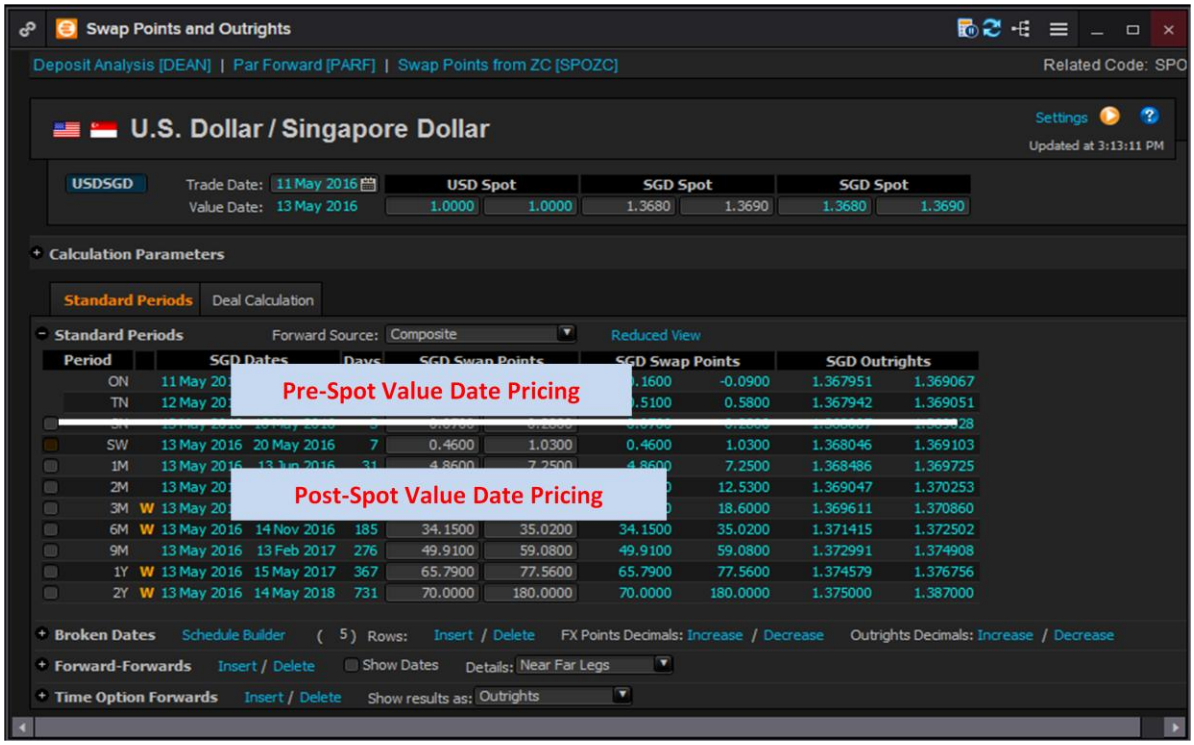
Notation	Settlement Date	Money Market Convention
Spot Next	15	From 14 to 15
Spot Week	21	From 14 to 21

1M. 2M etc would all take reference from the Spot Value Date.

Note: If the theoretical value date of a FX outright is on a weekend or a bank holiday, the valued ate is deferred to the next working date. (denoted by a H or a W)

Forward Delivery Date

Whether the deliverable outright price is a simple summation of the FX Spot price and the FX swap points depends on whether it is settled pre- or post-spot value date.



To better understand whether to take the bid (left hand side) or the ask (right hand side) swap points, we would first define the following terminology.

Firstly, we would first have to identify the **base currency** in any currency pair.

When we are referring to the USDSGD pair, USD is the base currency here as it is “in SGD per USD”. Secondly, we would have to identify whether it is a BuySell transaction or SellBuy transaction.

For example, in the previous example, if the client wants to sell 1 million USD in 3 months,

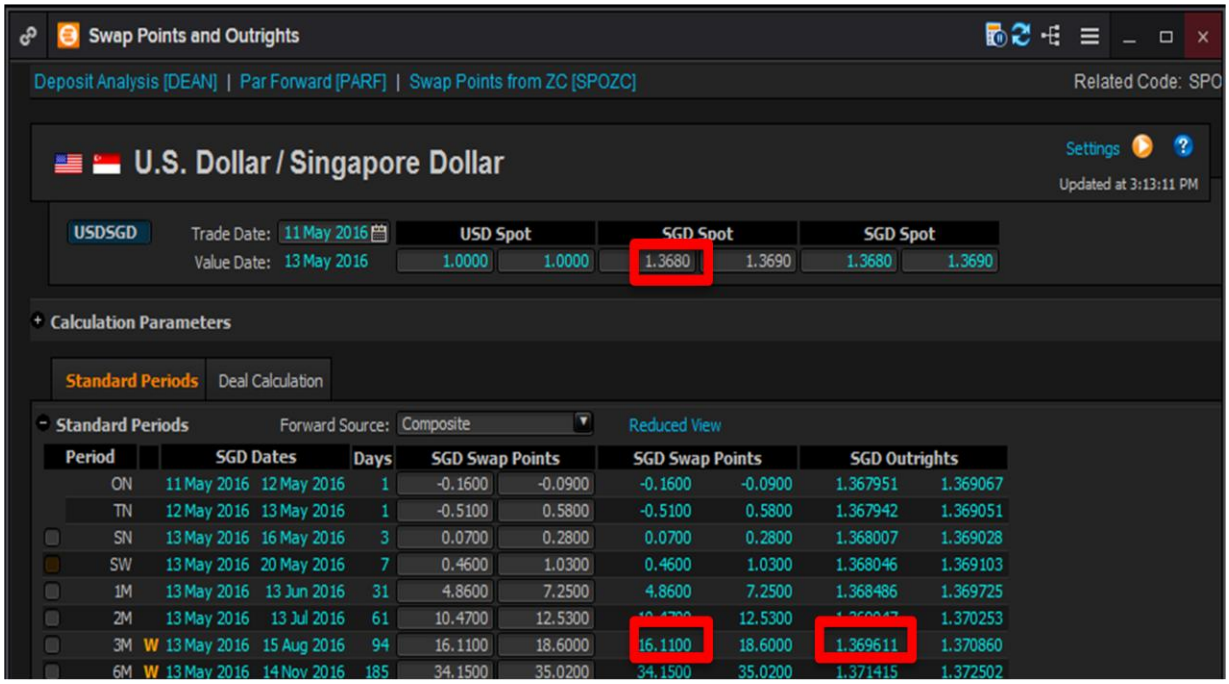
it would be a **buysell** base currency FX swap transaction. A table to illustrate this.

For Market Taker	Which side of the Swap Points quote should one take ?	
Transaction	Left Hand Side: Bid Price	Right Hand Side: Ask Price
Near Date	Buy base currency	Sell base currency
Far Date	Sell base currency	Buy base currency

Post-Spot Value Date Deliverable FX Outright

FX Outrights for Post-spot-value dates are usually a simple summation of the FX Spot Price and the FX Swap Points for the relevant period, subject to a scaling by a factor.

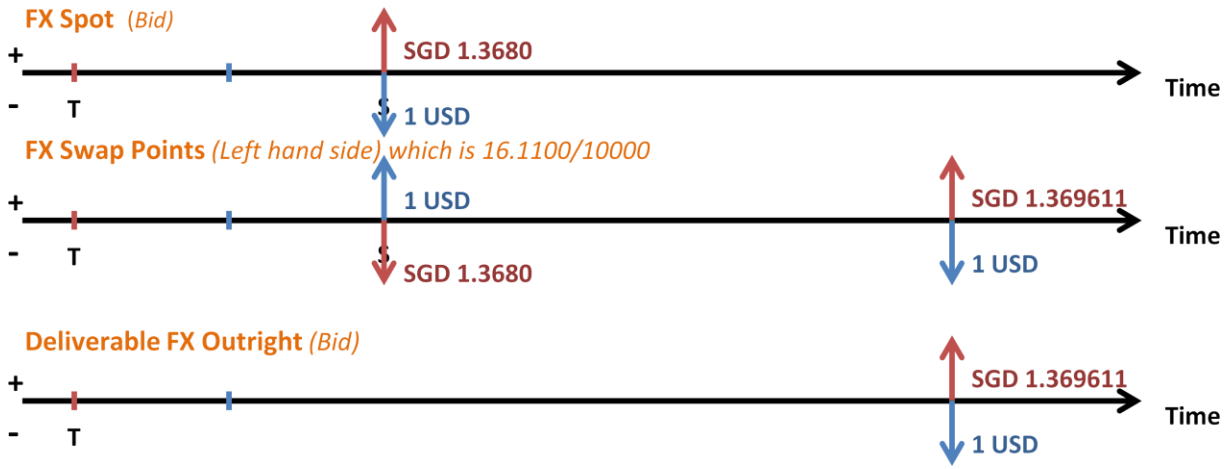
For example, taking the previous example into consideration where the client wishes to sell 1 million USD to get SGD in 3 months, the following figures would be utilized.



Since it is a 3M period with the value date ending on a weekend, the value date is deferred to the next working day.

The transaction involves selling 1 million USD to get SGD 3 months from the spot date, and hence the left hand side figure (bid swap price) is used.

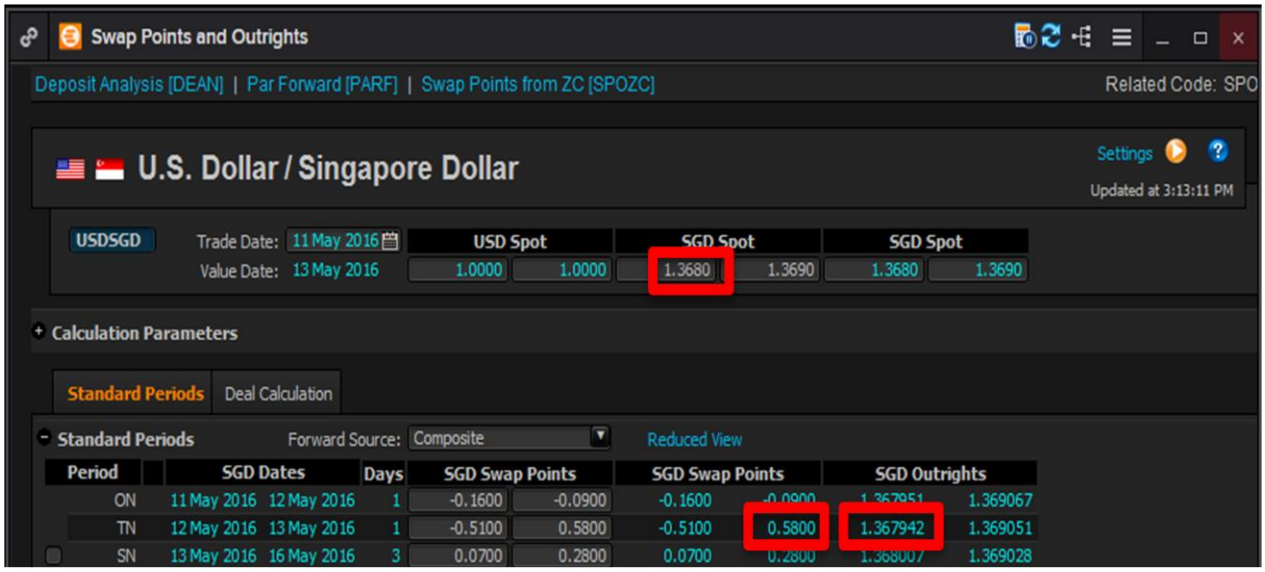
Thus, subject to the 4 decimal place scaling factor, the FX Outright is a simple summation.



Pre-Spot Value Date Deliverable FX Outright

However, it is different for dates pre-spot value.

When the forward transaction is settled on a pre-spot value date, the FX outright is now no longer a simple summation of the swap points and the FX Spot Price.



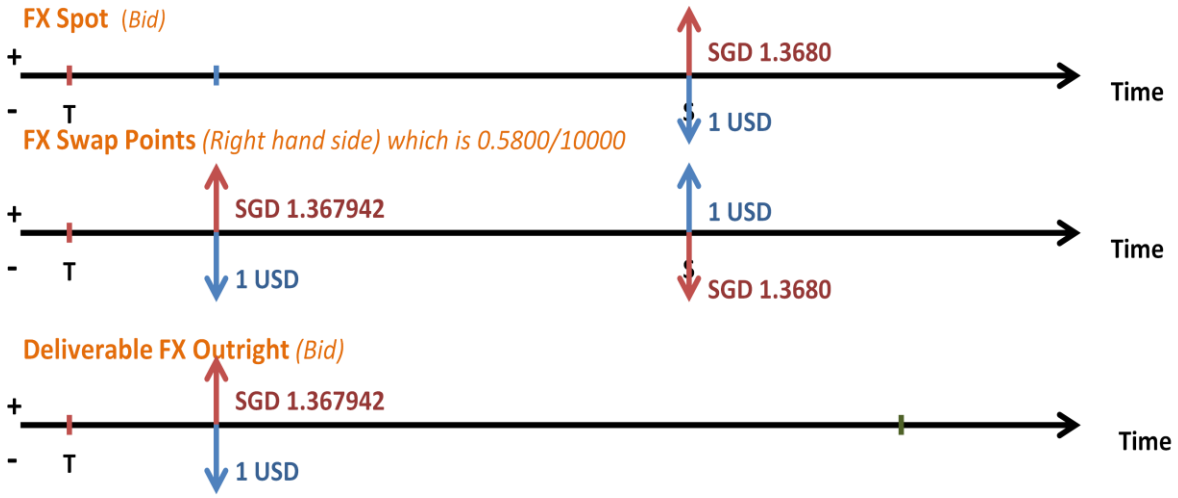
Let's take another example,

A client would like to lock in a forward contract which settles TomNext (TN) which is usually 1BD after the trade date.

Here, instead of adding the swap points (adjusted for the scaling factor) to the FX Spot Price, we would deduct it in order to "discount" the FX Spot Price to the FX TN Price.

The Right Hand Side (Ask) Swap points were used in this case as the transaction is considered a **sellbuy** of the base currency (USD).

Thus, while the FX Spot and Deliverable FX Outright bid prices were used and quoted, the ask swap points was used.



3b. Non Deliverable FX Outrights

Why is there a need for Capital Controls?

Capital controls are usually implemented in order to insulate the domestic interest rate from offshore speculation by restricting lending (directly and indirectly via the FX Swap market) by residents to non-residents using domestic currency. This essentially means that the country is trying to prevent the outflow of local currency.

This could be implemented by ensuring the onshore domestic currency interest rate is lower than the offshore domestic currency interest rate and was especially seen during the onset of the Asian Crisis, in Indonesia, Korea, Malaysia and Thailand to prevent indirect lending. Hence, **Non Deliverable Forwards** started to be used.

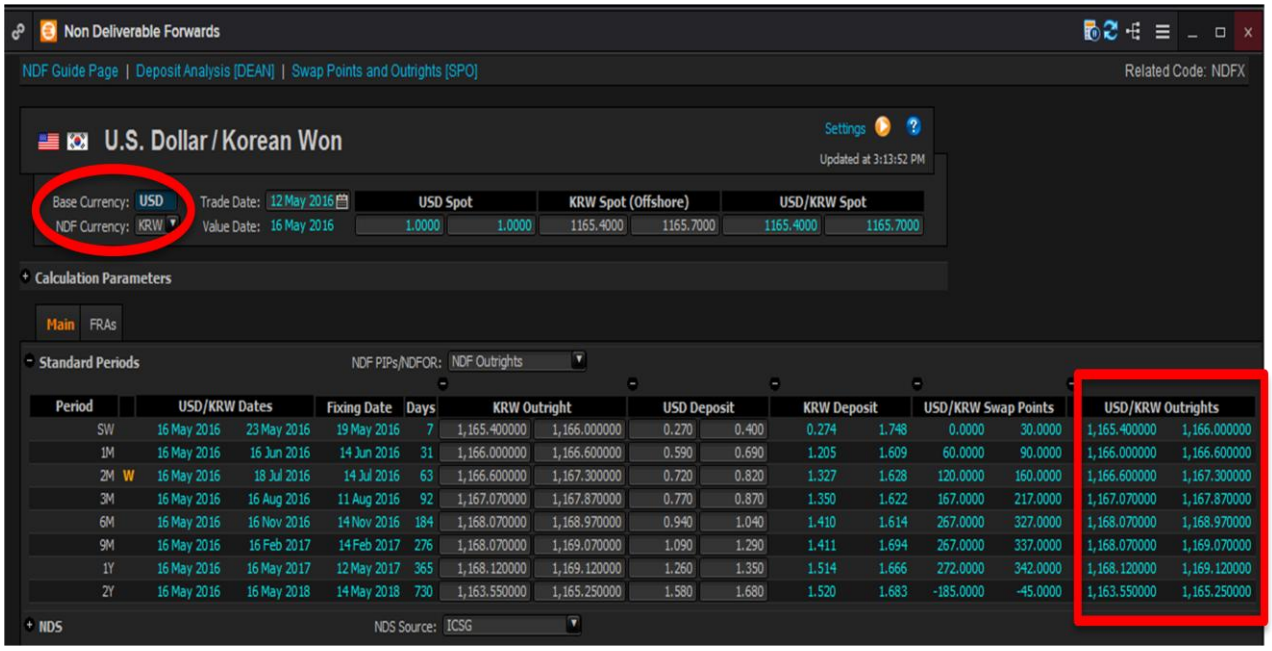
What are Non-Deliverable Forwards?

In a usual deliverable FX outright, there would be an exchange of two currencies, the base and counter currencies. However, in a NDF, the local currency (usually the counter currency) will not be exchanged and only the profiting party would receive the profit in USD.

Currently, countries such as Indonesia, Korea, Malaysia and Thailand make use of these NDFs.

How to use Eikon to derive NDF Outrights?

1. In the Eikon Toolbar, search **<NDF>**
2. Key in the Base and NDF Currency as indicated below (i.e. for USDKRW, USD is the base currency and KRW is the NDF currency, where the profiting party will receive the profit in USD terms at the end of the contract.
3. Look under the <**USD/KRW Outrights**> for the price of the FX NDF



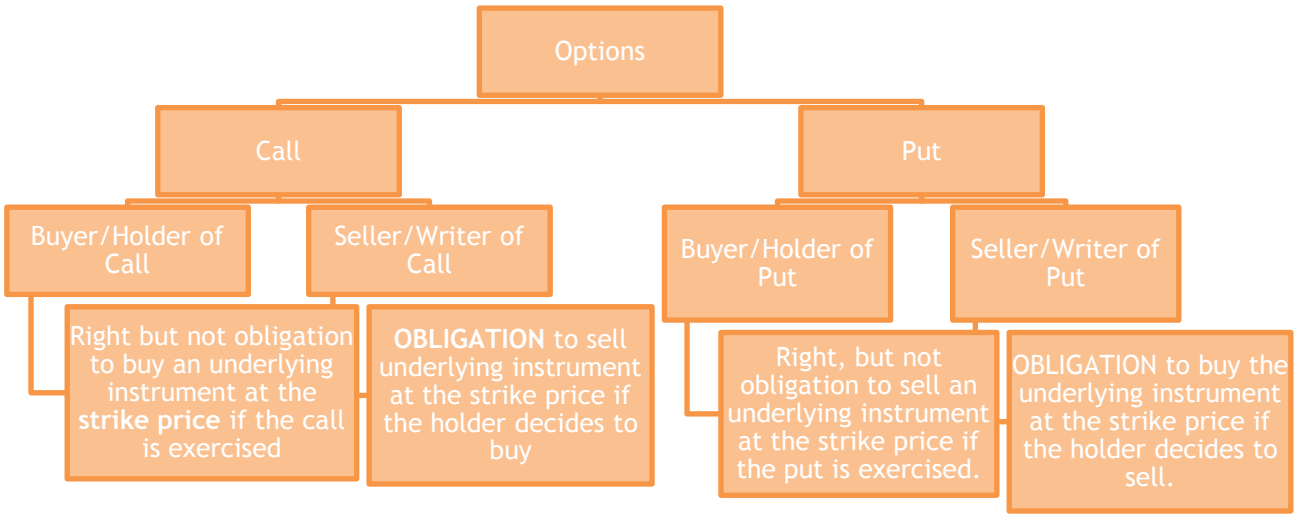
4. FX Options

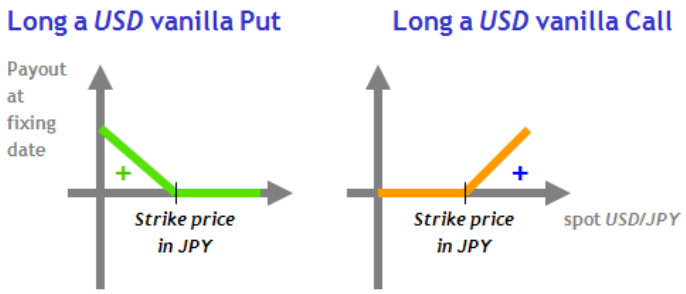
Overview

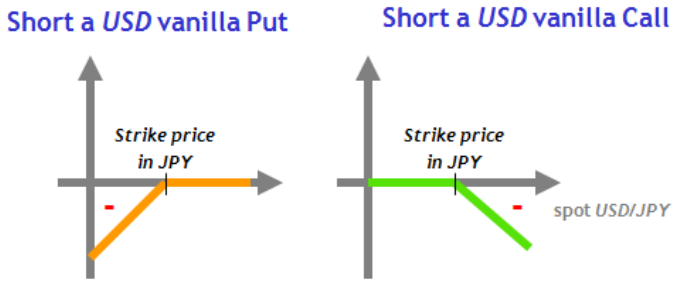
FX Options are a form of contingent claim. For an Option buyer, after the purchase of an option, they can choose whether or not to exercise the option (to buy or sell the underlying instrument) depending on whether they are going to make a profit.

There are two types of options:

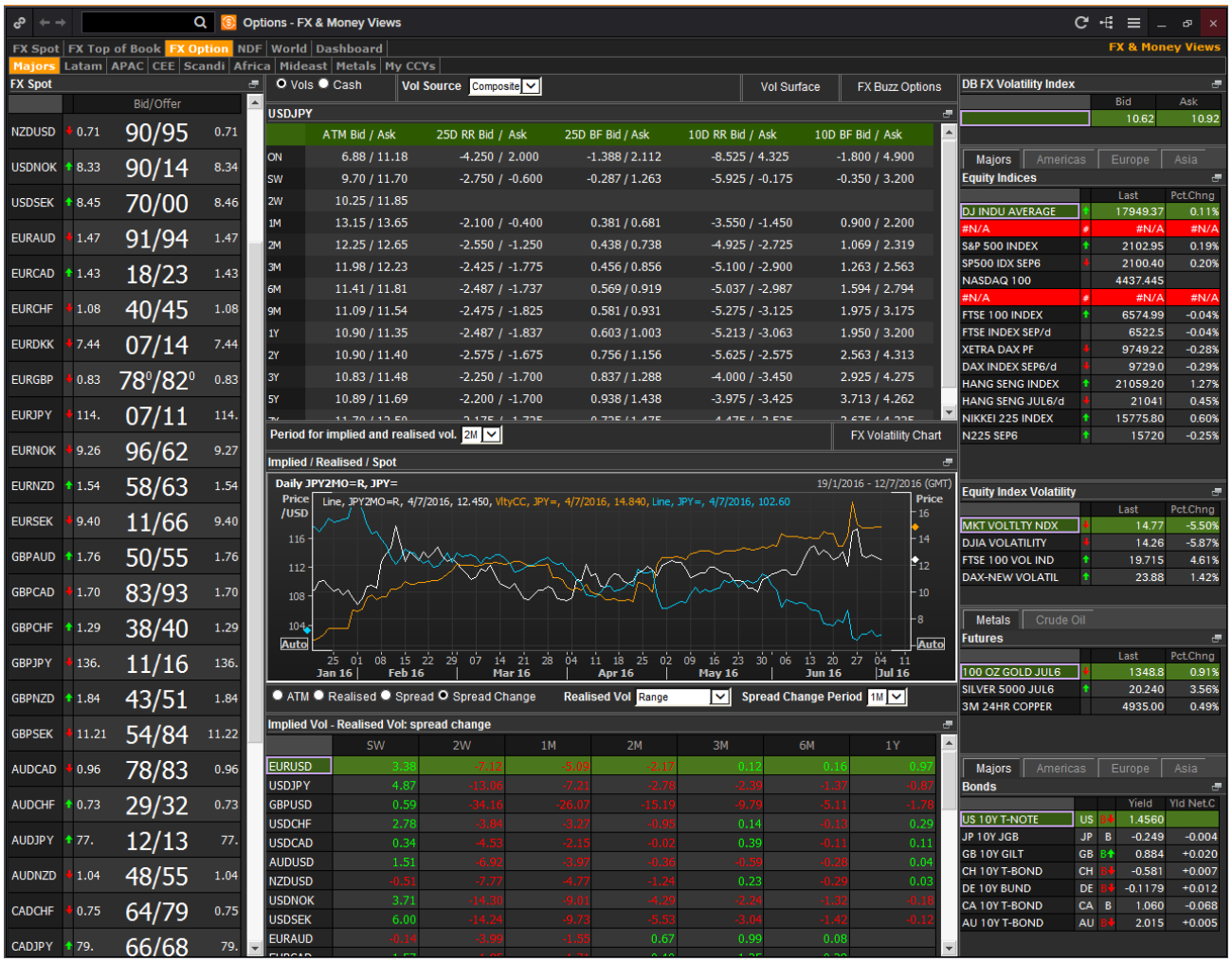
1. Call
2. Put







Options - FX and Money Views <FXMVFXO>



The Options – FX and Money Views <**FXMVFXO**> is a useful overview page for viewers to view all related information to trade FX options.

Here, the left hand column provides a list of FX Spot prices and a list of ATM (At the Money) Volatilities and Cash prices in the centre column.

At the right hand column, there are equity indices as well as the volatilities of the different equity indexes.

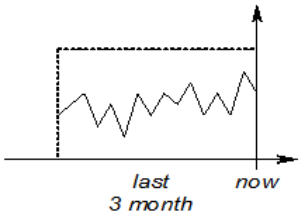
In order to navigate to the above page, simply search **<FXMVFXO>** in the Eikon Toolbar, and select your preferred FX Spot from the left-hand column. For lesser traded FX currency pairs, you could search by the geographical region as shown in the tab bar above.

FX Volatility

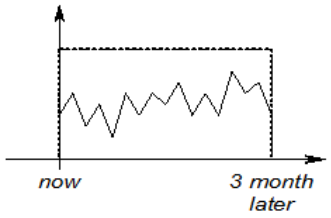
FX Volatility is a measure of the rate and magnitude of the change of prices or returns of the underlying asset which in this case is the price of the FX currency pair. On the other hand, the standard deviation is a measure of Historical Volatility.

Options traders trade implied volatility, because price volatility is the only uncertain parameter during the time of execution. Hence, they would buy at low implied volatility and sell high implied volatility.

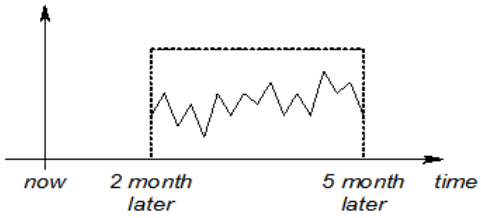
Realised Volatility or Historical Volatility



Implied Volatility



3 month forward volatility 2 months from now

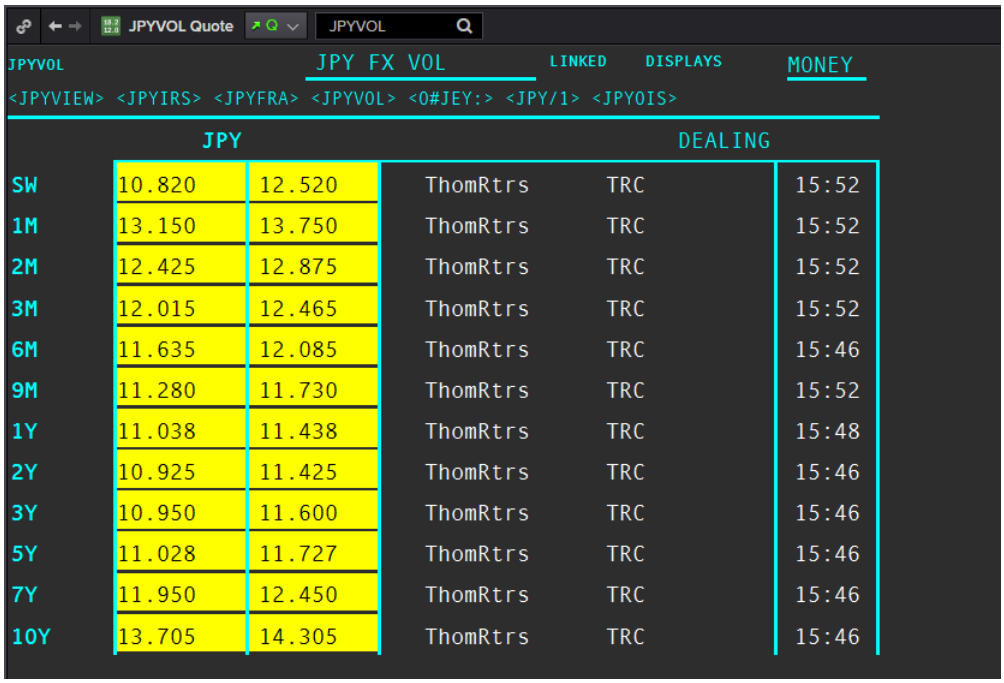


FX Implied Volatility Term Structure

Implied volatility is the trader's estimate of how volatile spot FX will be. The price of a FX Option is quoted in implied volatility, especially in OTC Markets. Formulae such as the Black-Scholes translates option premium into implied volatility.

For example, to view the FX Volatility Term Structure of the USDJPY, one can do the following.

Press F4 to open the quote app, search **<JPYVOL>** and press enter.



FX Implied Volatility

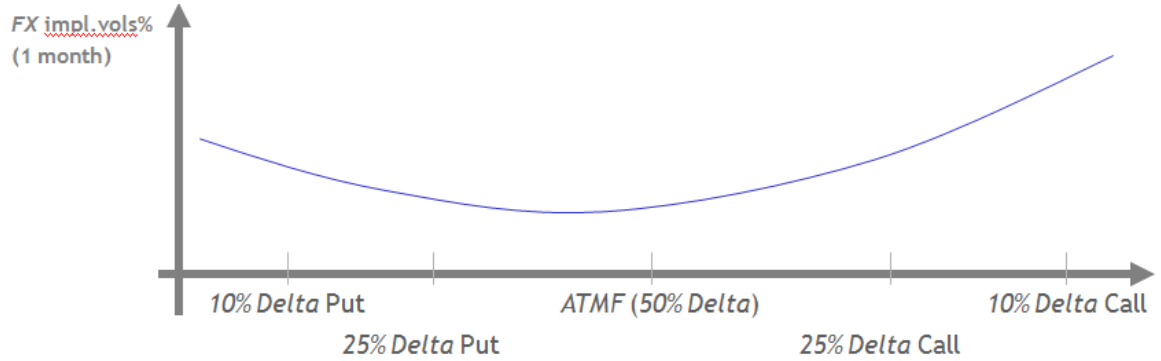
Option traders trade implied volatility which implies that inherent in any option premium is an implicit estimate of the future volatility which is the implied volatility.

There are two ways for traders to quote options, strike prices or delta.

First, let us understand the concept of Delta.

Delta or Delta_Spot is the changes in the option premium which represents the change in the price of underlying asset. Hence, it is the first degree differentiation of the profit or loss at expiry at strike. When given the delta figures, users will use these figures and the tenor in order to determine the strike price.

Delta can also be used to define whether the option is at the money, in the money and out of the money.



When the Delta is at 50%, the FX vanilla option is At The Money Forward (ATMF), which means it has a strike price that is equivalent to the relevant FX Outright price.

At 10% Delta Put, it is also equivalent to a 90% Delta Call. Here, the Call option is in the money while the put option is out of the money.

Correspondingly, at the 10% Delta Call which is also a 90% Delta Put, the Put option is in the money while the Call Option is out of the money.

Hence, when delta is more than 50%, the option is in the money and when delta is less than 50%, the option is out of the money. Moneyness is interpreted from the FX Option buyer's perspective.

Secondly, there are two types of Options styles traded, in general.

1. European-style options

European-style options are options that can only be exercised on the stipulated expiry date of the option.

2. American-style options

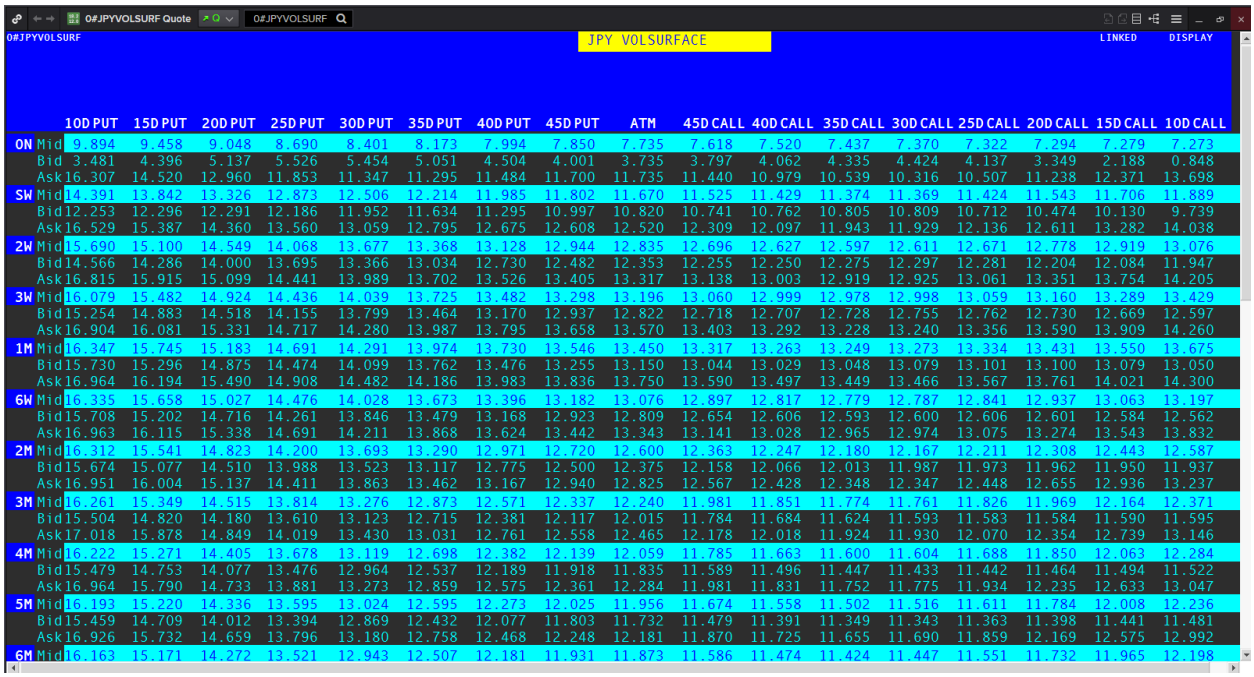
American-style options are options that can be exercised anytime before or on the expiry date.

FX Implied Volatility Surface

On Eikon, a series of volatility surface quotes can be obtained. Using this page, users can choose any tenor necessary (Vertical column) and any strike price (priced using the delta figure) (Horizontal row). Here, the delta figures range from 10D Put (90D Call) to a 10D Call (90D Put).

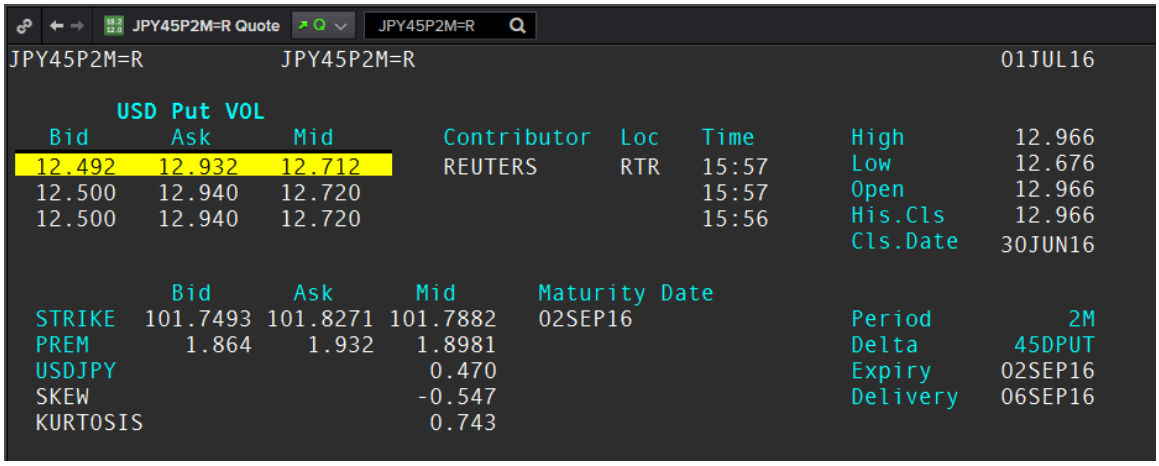
To arrive at the following page,

Press F4 to open the quote app, and search <**JPYVOLSURF**>.



		10D PUT	15D PUT	20D PUT	25D PUT	30D PUT	35D PUT	40D PUT	45D PUT	ATM	45D CALL	40D CALL	35D CALL	30D CALL	25D CALL	20D CALL	15D CALL	10D CALL
ON	Mid	9.894	9.458	9.048	8.690	8.401	8.173	7.994	7.850	7.735	7.618	7.520	7.437	7.370	7.322	7.294	7.279	7.273
	Bid	3.481	4.396	5.137	5.526	5.454	5.051	4.504	4.001	3.735	3.797	4.062	4.335	4.424	4.137	3.349	2.188	0.848
	Ask	16.307	14.520	12.960	11.853	11.347	11.295	11.484	11.700	11.735	11.440	10.979	10.539	10.316	10.507	11.238	12.371	13.698
1W	Mid	14.391	13.842	13.326	12.873	12.506	12.214	11.985	11.802	11.670	11.525	11.429	11.374	11.369	11.424	11.543	11.706	11.889
	Bid	12.253	12.296	12.291	12.186	11.952	11.634	11.295	10.997	10.820	10.741	10.762	10.805	10.809	10.712	10.474	10.130	9.739
	Ask	16.529	15.387	14.360	13.560	13.059	12.795	12.675	12.608	12.520	12.309	12.097	11.943	11.929	12.136	12.611	13.282	14.038
2W	Mid	15.690	15.100	14.549	14.068	13.677	13.368	13.128	12.944	12.835	12.696	12.627	12.597	12.611	12.671	12.778	12.919	13.076
	Bid	14.566	14.286	14.000	13.695	13.366	13.034	12.730	12.482	12.353	12.255	12.250	12.275	12.297	12.281	12.204	12.084	11.947
	Ask	16.815	15.915	15.099	14.441	13.989	13.702	13.526	13.405	13.317	13.138	13.003	12.919	12.925	13.061	13.351	13.754	14.205
3W	Mid	16.079	15.482	14.924	14.436	14.039	13.725	13.482	13.298	13.196	13.060	12.999	12.978	12.998	13.059	13.160	13.289	13.429
	Bid	15.254	14.883	14.518	14.155	13.799	13.464	13.170	12.937	12.822	12.718	12.707	12.728	12.755	12.762	12.730	12.669	12.597
	Ask	16.904	16.081	15.331	14.717	14.280	13.987	13.795	13.658	13.570	13.403	13.292	13.228	13.240	13.356	13.590	13.909	14.260
1M	Mid	16.347	15.745	15.183	14.691	14.291	13.974	13.730	13.546	13.450	13.317	13.263	13.249	13.273	13.334	13.431	13.550	13.675
	Bid	15.730	15.296	14.875	14.474	14.099	13.762	13.476	13.255	13.150	13.044	13.029	13.048	13.079	13.101	13.100	13.079	13.050
	Ask	16.964	16.194	15.490	14.908	14.482	14.186	13.983	13.836	13.750	13.590	13.497	13.449	13.466	13.567	13.761	14.021	14.300
6W	Mid	16.335	15.658	15.027	14.476	14.028	13.673	13.396	13.182	13.076	12.897	12.817	12.779	12.787	12.841	12.937	13.063	13.197
	Bid	15.708	15.202	14.716	14.261	13.846	13.479	13.168	12.923	12.809	12.654	12.606	12.593	12.600	12.606	12.601	12.584	12.562
	Ask	16.963	16.115	15.338	14.691	14.211	13.868	13.624	13.442	13.343	13.141	13.028	12.965	12.974	13.075	13.274	13.543	13.832
2M	Mid	16.312	15.541	14.823	14.200	13.693	13.290	12.971	12.720	12.600	12.363	12.247	12.180	12.167	12.211	12.308	12.443	12.587
	Bid	15.674	15.077	14.510	13.988	13.523	13.117	12.775	12.500	12.375	12.158	12.066	12.013	11.987	11.973	11.962	11.950	11.937
	Ask	16.951	16.004	15.137	14.411	13.863	13.462	13.167	12.940	12.825	12.567	12.428	12.348	12.347	12.448	12.655	12.936	13.237
3M	Mid	16.261	15.349	14.515	13.814	13.276	12.873	12.571	12.337	12.240	11.981	11.851	11.774	11.761	11.826	11.969	12.164	12.371
	Bid	15.504	14.820	14.180	13.610	13.123	12.715	12.381	12.117	12.015	11.784	11.684	11.624	11.593	11.583	11.584	11.590	11.595
	Ask	17.018	15.878	14.849	14.019	13.430	13.031	12.761	12.558	12.465	12.178	12.018	11.924	11.930	12.070	12.354	12.739	13.146
4M	Mid	16.222	15.271	14.405	13.678	13.119	12.698	12.382	12.139	12.059	11.785	11.663	11.600	11.604	11.688	11.850	12.063	12.284
	Bid	15.479	14.753	14.077	13.476	12.964	12.537	12.189	11.918	11.835	11.589	11.496	11.447	11.433	11.442	11.464	11.494	11.522
	Ask	16.964	15.790	14.733	13.881	13.273	12.859	12.575	12.361	12.284	11.981	11.831	11.752	11.775	11.934	12.235	12.633	13.047
5M	Mid	16.193	15.220	14.336	13.595	13.024	12.595	12.273	12.025	11.956	11.674	11.558	11.502	11.516	11.611	11.784	12.008	12.236
	Bid	15.459	14.709	14.012	13.394	12.869	12.432	12.077	11.803	11.732	11.479	11.391	11.349	11.343	11.363	11.398	11.441	11.481
	Ask	16.926	15.732	14.659	13.796	13.180	12.758	12.468	12.248	12.181	11.870	11.725	11.655	11.690	11.859	12.169	12.575	12.992
6M	Mid	16.163	15.171	14.272	13.521	12.943	12.507	12.181	11.931	11.873	11.586	11.474	11.424	11.447	11.551	11.732	11.965	12.198

Double click on any on quote and the detailed price for the corresponding option will be presented as follows.



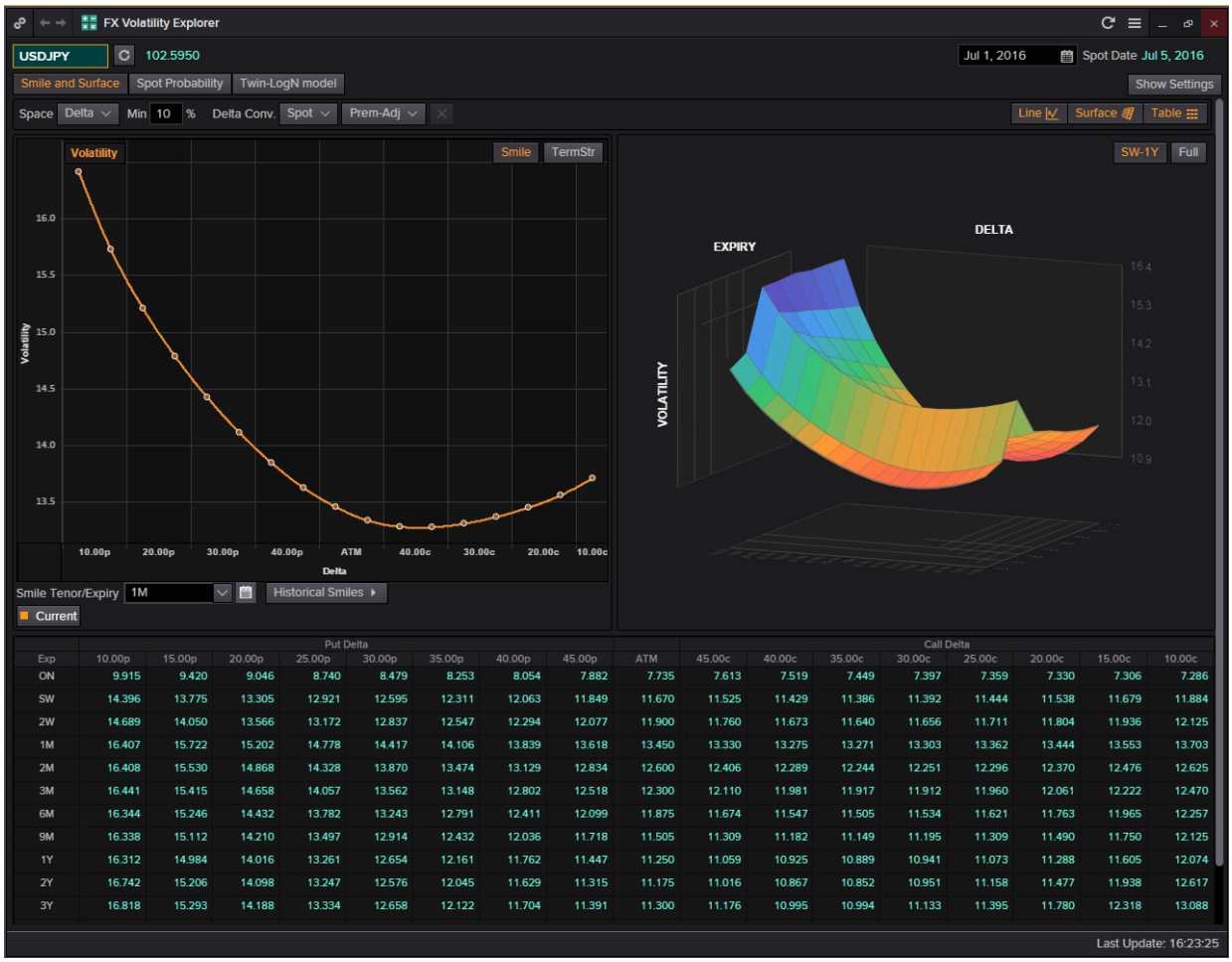
FX Volatility Explorer <FXVE>

Here, using the FX Volatility Explorer, users are able to view the volatility smiles (Volatility against Delta) at different expiries. Furthermore, the spot probabilities are provided in the second tab, where the different probabilities as well as the implied probability distributions are plotted. Here, the discrepancy between the implied distribution curve and the log-normal distribution curve, especially at the lower delta values would give rise to the "fat-tail effect" or the smile at the two ends of the implied volatility curve.

However, one should note that should the "fat tail effect" only occurs if the probability distribution of the implied and log-normal distribution differs. If not, a "smirk" like curve as seen below would be presented.

In order to utilise the **<FXVE>** application,

1. In the Eikon Toolbar, search **<FXVE>**
2. Choose your currency pair and view the different tenors and deltas in order to obtain the implied volatility of the option premium necessary.

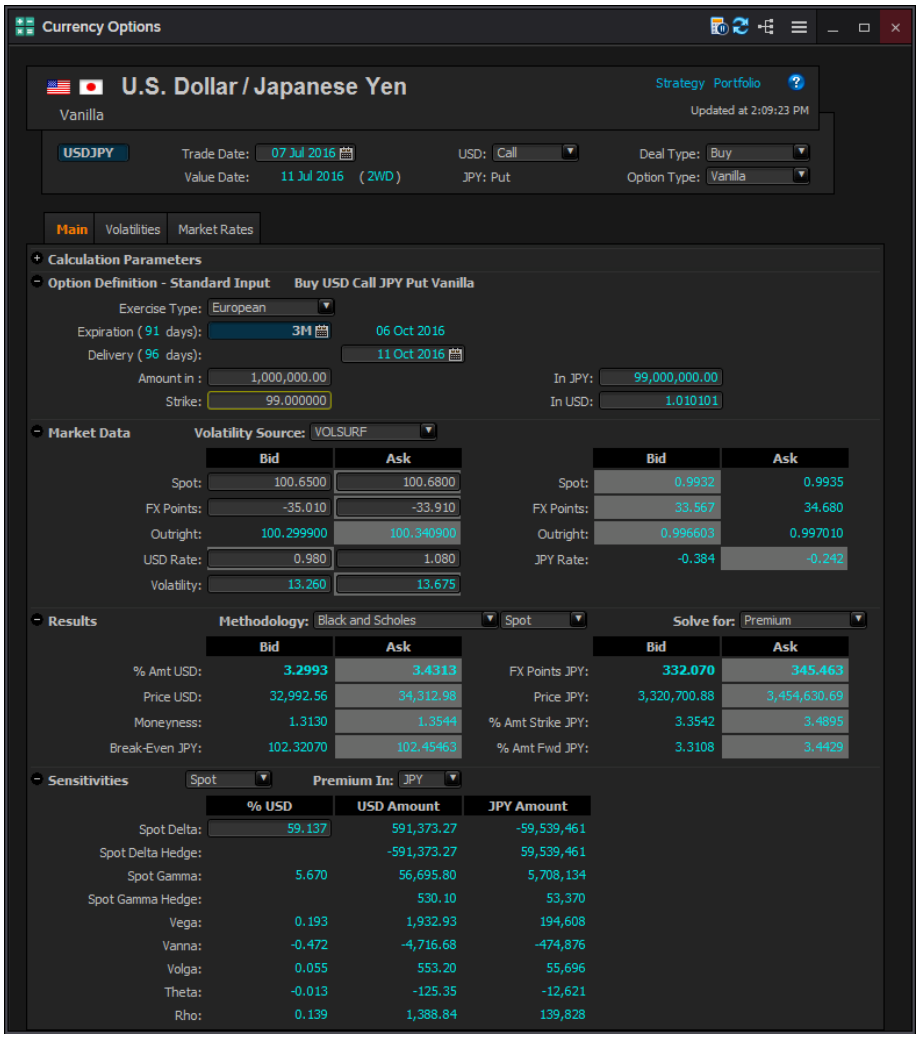


FX Vanilla Option Pricing and Greek Analysis

Currency Options Calculator <COPT>

In order to calculate the price of a basic vanilla option, one could use the **Currency Options** Calculator <COPT> to calculate the price you would need to pay.

In the Eikon Toolbar, search **<COPT>**



You would need to change or adjust the following according to your specifications.

1. Currency Pair
2. Buy/Sell a Call/Put
3. Notional Amount
4. European or American Style
5. Tenor
6. Strike Price
7. Delta if any.

You would then refer to the Price (JPY) for example, for the price you would need to pay in JPY or the corresponding Price (USD) for the price in USD.

Sensitivities

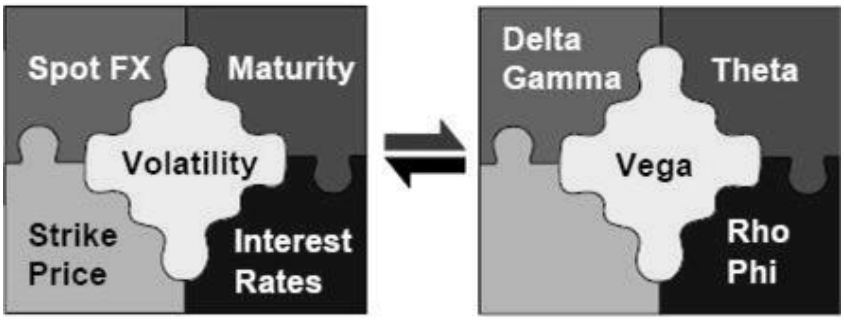
In mathematical finance analysis, Greeks refer to quantities which represent the sensitivity of the price of derivatives to such as options to a change in underlying parameters

Gamma, Γ, refers to changes in delta over changes in underlying price. In order words, it is the rate of change of delta, which is the rate of change of the theoretical option value with the price of the underlying asset.

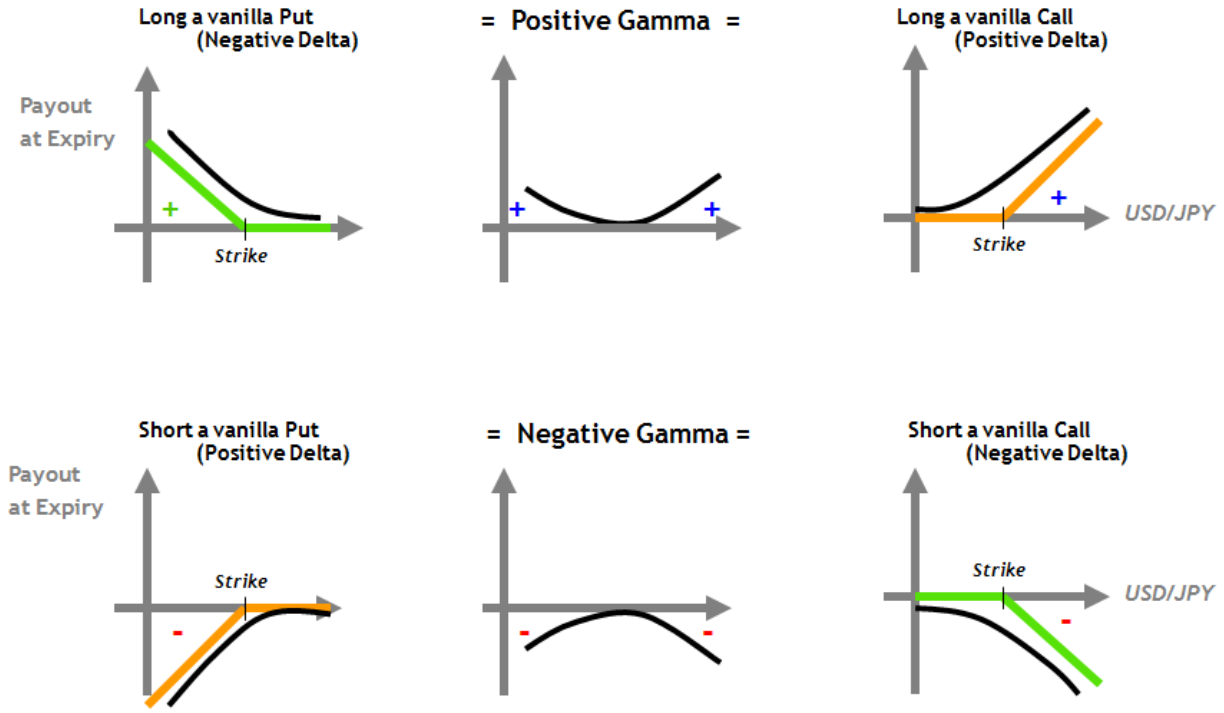
Theta, θ, refers to the change in option premium over a unit change in time to expiry. It measures the time decay of the option over time.

Rho, ρ, measures the changes in option premium over a 1% change in interest rates.

Vega, υ, measures the changes in option premium over changes in implied volatility of the underlying asset.

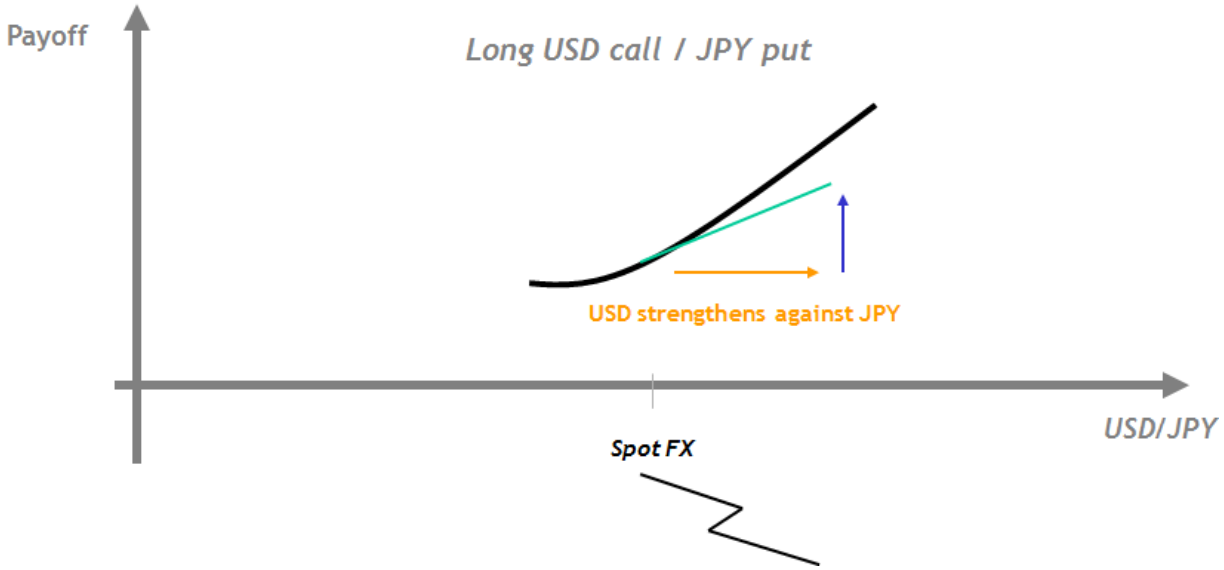


Relationship between Delta and Gamma



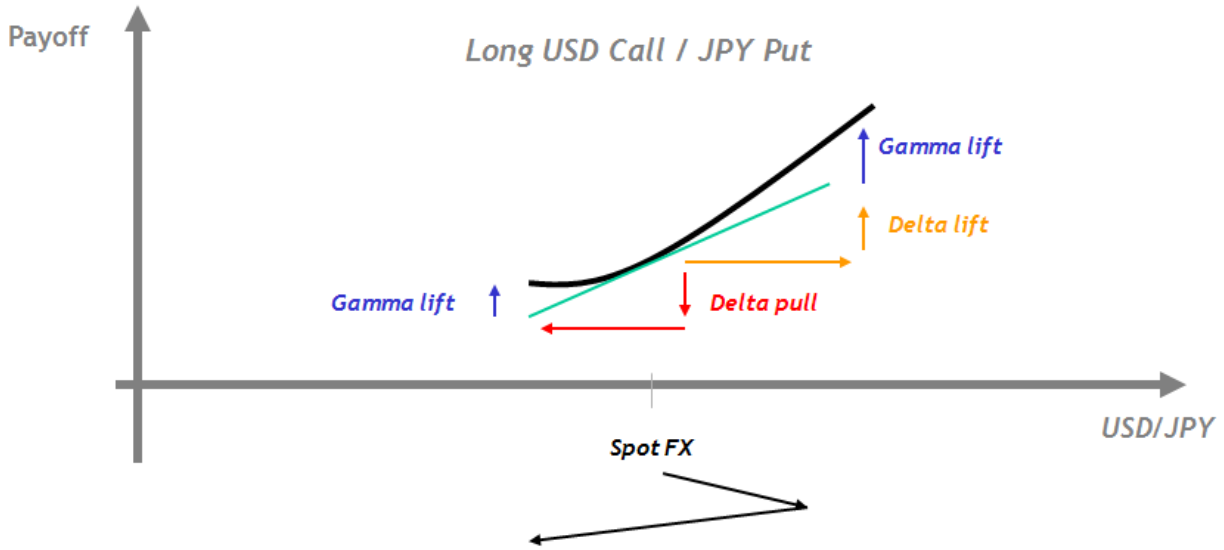
Positve Delta would allow holders of options to gain if the trend is bullish but to lose money if the trend is bearish. Hence the market o market value increases as USD strengthens against JPY.

Mark to Market value increases as *USD* strengthens against *JPY*.



However, the situation is alleviated with a positve gamma, which allows quick gains and slow losses.

Mark to Market value increases quickly as USD strengthens against JPY and
Mark to Market value gets extra lift despite delta pulls down the value
as *USD* weakens against *JPY*.



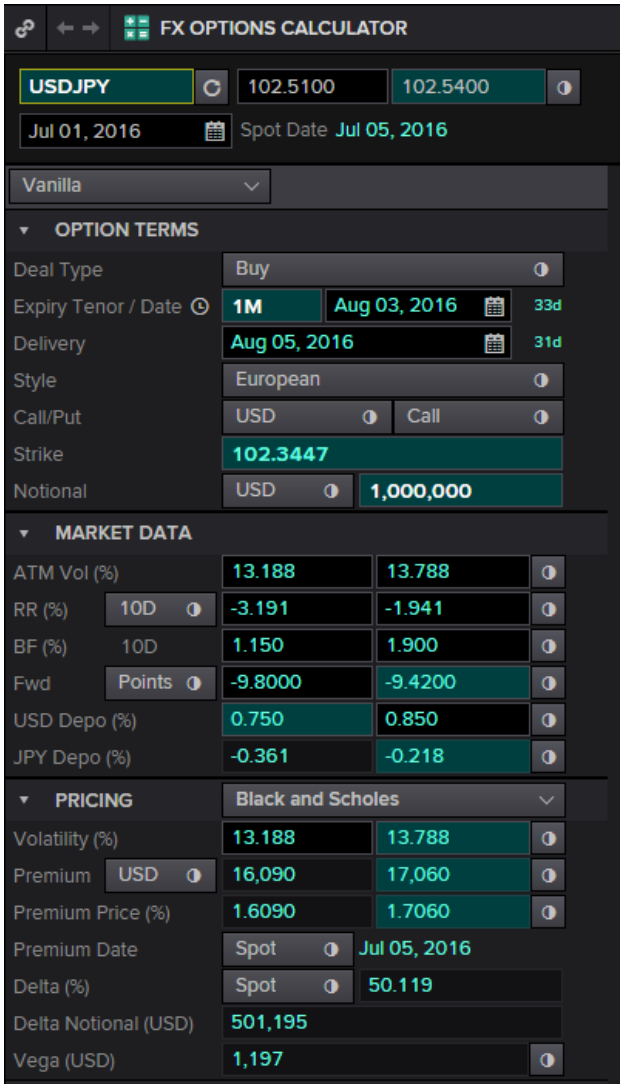
We will cover more about trading strategies involving delta and gamma subsequently.

FX Options Calculator <FXOC>

For calculating the option premium costs for other types such as:

1. Vanilla
2. Barrier
3. European Digital
4. Touches
5. Average
6. Lookback
7. Forward Start
8. Compound
9. Chooser
10. Vanilla Strategy
11. Multi-Leg Strategy (User Defined Strategy + Strip Builder)

Users are able to utilise the FXOC in order to find the option premium in a similar way as to how to utilise COPT.



In the Eikon Toolbar, search **<FXOC>**

Adjust the following settings:

1. Currency Pair
2. Type of Strategy (e.g. Vanilla)
3. Buy or Sell
4. Expiry or Tenor
5. European or American
6. Call or Put

Note that the ATM Strike is by default the FX Outright at the end of the tenor.

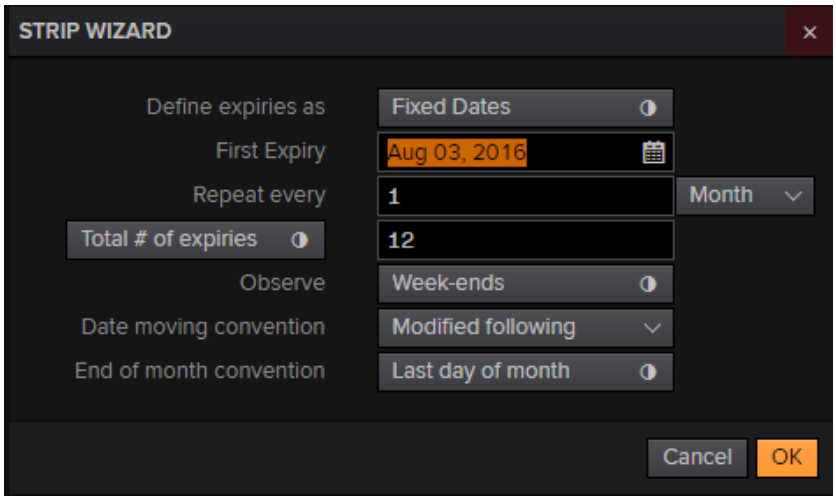
Strip Builder

In order to build a series of options, users can utilise the strip wizard function in order to repeat the same option over and over again.

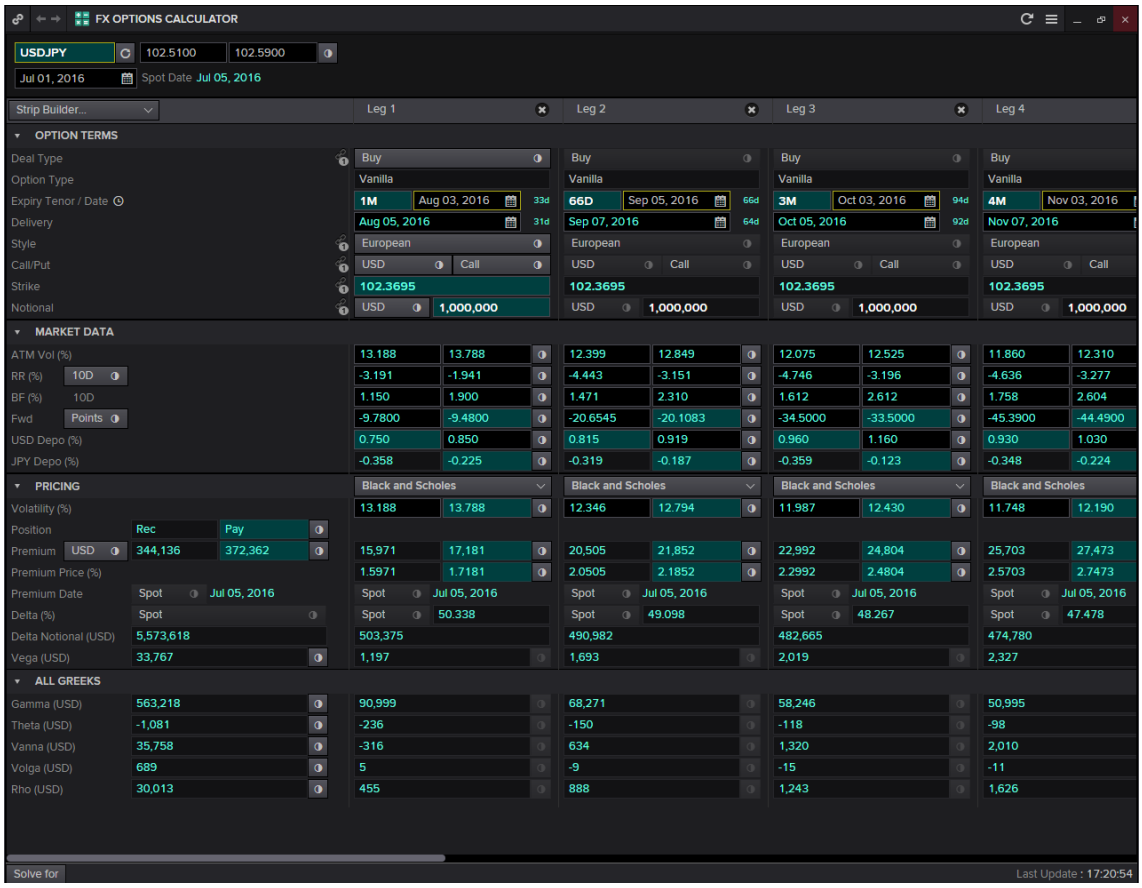
For example, using the previous Vanilla option, we wish to repeat this for 12 times every month.

1. Select the Strip Builder through Multi-leg strategy>Strip Builder

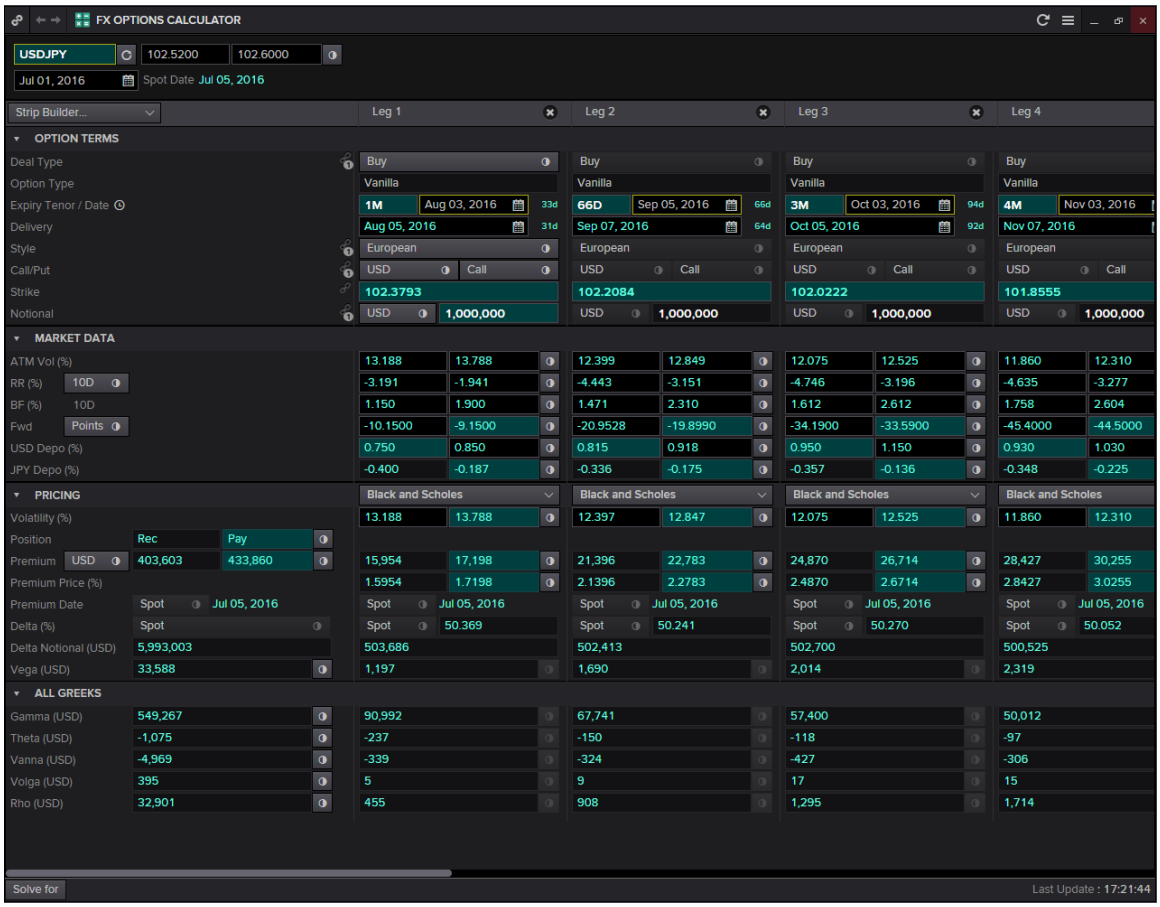
2. In the following page, adjust the number of expires and the repetition frequency.



3. The following page will appear, with a series of options being repeated consecutively.



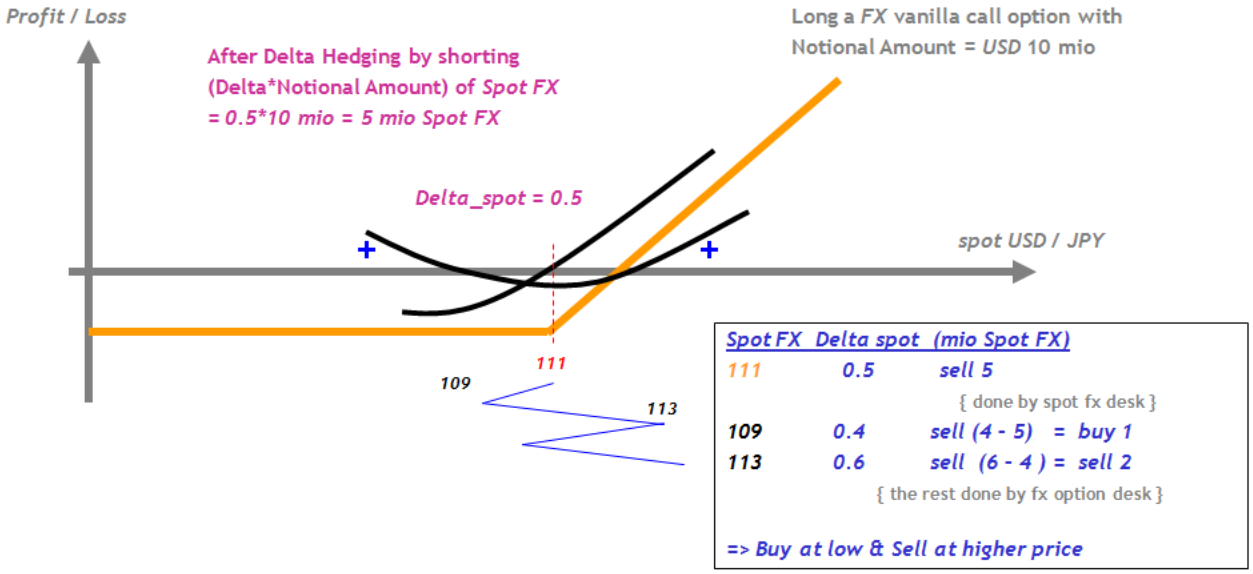
4. By default, the calculator would synchronise all the strike prices to the same price. However, users are able to adjust this, by clicking on the  button at the strike row.
5. This would cause the strike prices to unsynchronise and will now follow the FX outright price at each of the expiry dates.



Trading Strategies

Dynamic Delta Hedging: Gamma Trading

FX vanilla option holders with time-decay in time, will carry out *dynamic delta hedging* to greatly reduce spot FX sensitivity so that they can focus on Gamma Trading.



When option holders conduct dynamic delta hedging, they remove the price trend and instead focus on the changes in implied volatility.

With Notional of *USD* 10 million.

When Delta_spot is 0.5
=> holder of *FX* vanilla call option owns approximately *USD* 5 millions, he/she can sell off *USD* 5 millions.

Asset (owns)	Liability (sells by *FX* spot desk)	becomes	Asset	Liability
USD 5 millions (changing figure)	- *USD* 5 millions		*USD* 5 millions	*USD* 5 millions

When Delta_spot is 0.4,
=> holder of *FX* vanilla call option owns approximately *USD* 4 millions, he/she needs to buy back *USD* 1 million.

Asset (buys more)	Liability (sold)	becomes	Asset	Liability
USD 4 millions (changing figure)	*USD* 5 millions		*USD* 4 millions	*USD* 4 millions
	- *USD* 1 millions			

When Delta_spot is 0.6
=> holder of *FX* vanilla call option owns approximately *USD* 6 millions, he/she needs to sell off *USD* 1 million.

Asset (owns)	Liability (sells by *FX* option desk)	becomes	Asset	Liability
USD 6 millions (changing figure)	*USD* 4 millions		*USD* 6 millions	*USD* 6 millions
	+ *USD* 2 million			

With Gamma trading, when there is a greater change in price, meaning more volatility, holders will now profit instead of facing the risk of losing money.

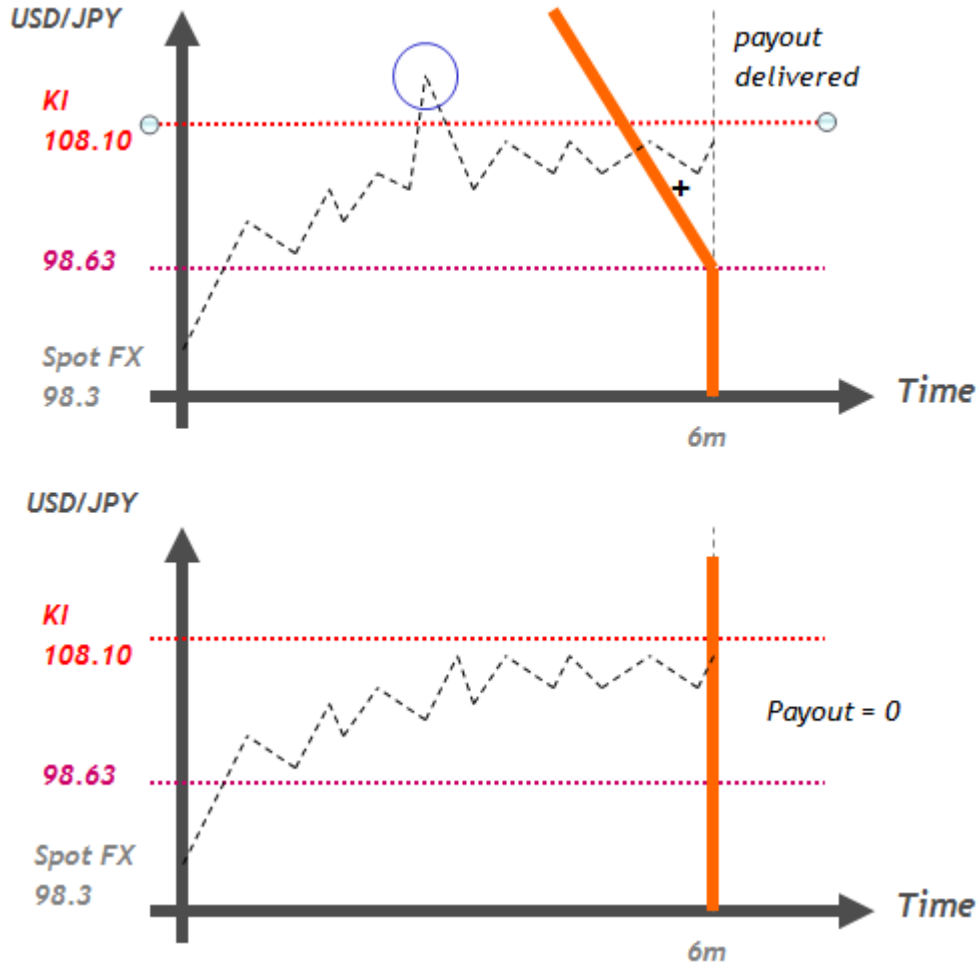
Barriers

FX Barriers options are path-dependent standard options with conditions attached. They can either knock-in (appear) or knock-out (disappear) or both.

Holders of FX Knock-In barriers will own nothing first and if the price crosses that of the barrier, the FX Vanilla Option appears.

However, holders of FX Knock-Out Barriers will own a FX Option first and if the price crosses that of the barrier, the FX Vanilla Option will disappear.

Some Corporate Treasurers prefer these options as the barrier options may be cheaper than the usual FX vanilla options.



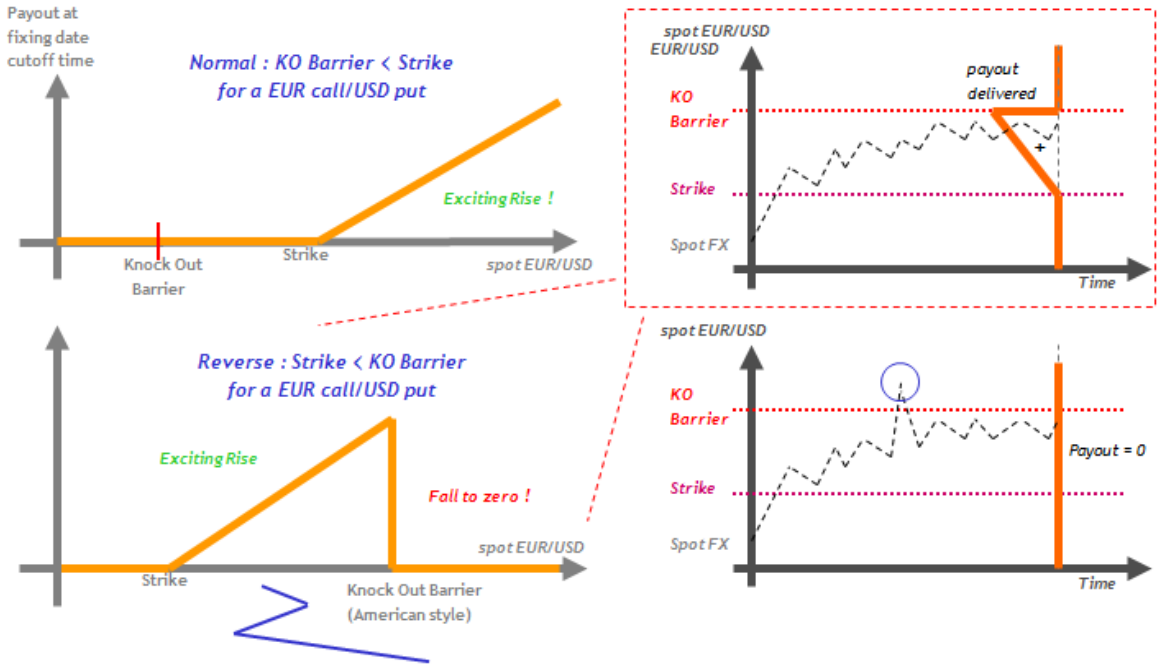
Above is two scenarios, with the first being when the price crosses the Knock-in barrier and the second being when the price does not cross the Knock-in barrier.

American Style FX Accumulator

An American Style FX Accumulator is a structured product that may allow client to buy a currency against another at a lower rate thans pot FX or lower rate than FX Outrihgt or both at the trade date.

After entering the contract, clients are committed to buying the currency at agreed rate (strike) on fixing dates until maturity.

While this may allow clients to purchase the currency at a cheap price, they face the danger that if spot FX trades above the Knock-out barrier, they do not have any more accumulation and if the spot FX trades below strike, the clients have to accumulate more, for example at twice the amount at agreed rate.



For example, users may purchase a series of Reverse Knock-Out Calls and Knock-Outs Puts which the Puts having double the notional amount of that of Calls.

Client buys *EUR* against *USD*.

Contract Period (Maturity) : 6 months
Settlement Period : half-yearly
Fixing Period (Observation Frequency) : monthly

Amount : *EUR* 15,000 per month (cumulative = *EUR* 90,000)

Spot *EUR/USD* : *USD* 1.32
Agreed Accumulative Rate : 98.48% of spot *EUR/USD* = *USD* 1.30

Knock-out level : 101.5% of spot *EUR/USD* = *USD* 1.34

Leverage = 1:2 (client is advised to buy one *RKO call* and sell two *KO puts*)

Cost : zero to client

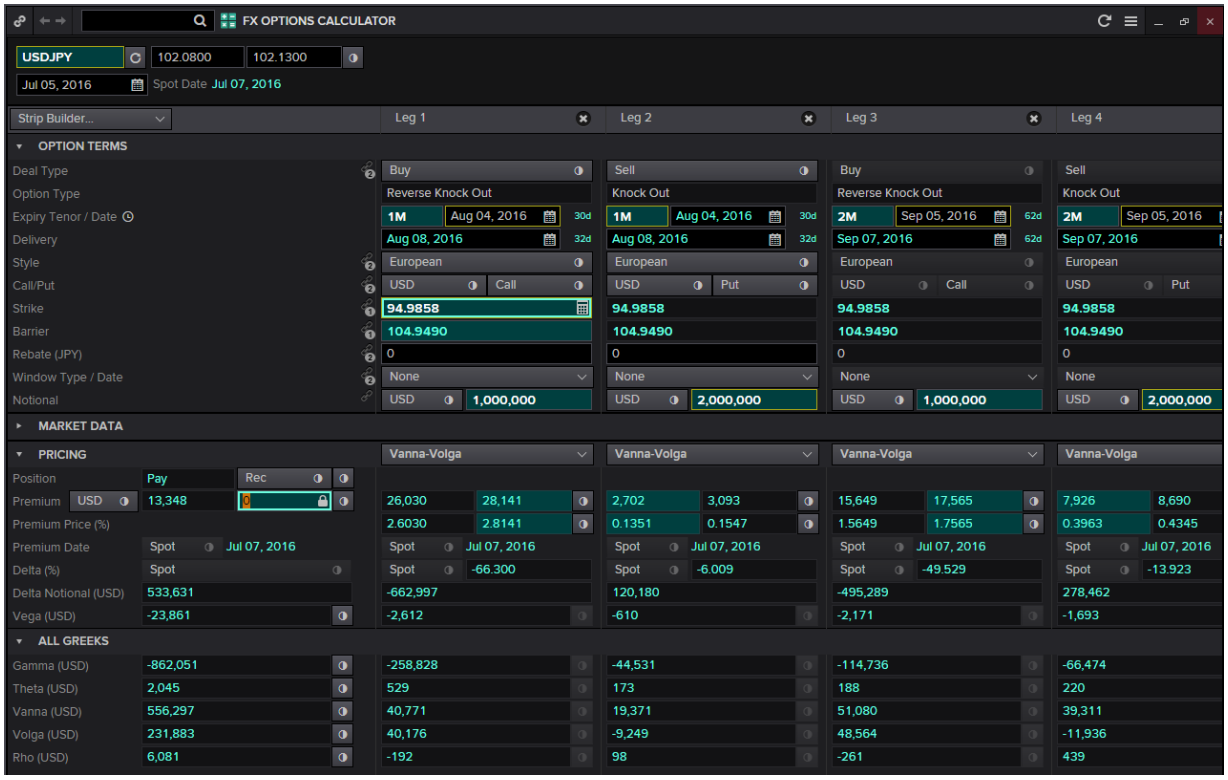
A table to illustrate the ideal and a possible outcome

Observations	Ideally, client buys 1 *EUR* @ 1.30 *USD*	Actual Outcomes 1 *EUR* @ 1.30 *USD*
First Month	*EUR* 15,000	*EUR* 15,000
Second Month	*EUR* 15,000	*EUR* 30,000
Third Month	*EUR* 15,000	*EUR* 15,000
Forth Month	*EUR* 15,000	*EUR* 15,000
Fifth Month	*EUR* 15,000	Knocked out
Sixth Month	*EUR* 15,000	Nothing
Total accumulated	***EUR* 90,000**	***EUR* 75,000**

Profit realised = *USD* 75000*(1.36 - 1.30)

Here is how to perform the above using the FXOC. After setting the different settings, users should set the cost to 0.

First, select the “Solve For” button at the bottom left and click the strike for the Reverse KO option. Next select the premium (highlighted in orange) and set it to 0. Press enter and the new strike will appear. Ensure that they are all set at the same strike price and that the notional for KO puts is twice that of the regular KO calls (for leverage of 1:2)



5. Indicative Data v Tradable Data

What is the Key Difference?

For general users, there is no dire need to understand the difference between indicative figures as well as tradable figures, since we are unlikely to trade on the numbers and merely need there for analysis.

However, when quoting figures to clients, some bankers may choose to use tradable figures which could be traded upon. Tradable figures usually exhibit a smaller bid-ask spread as compared to indicative figures.

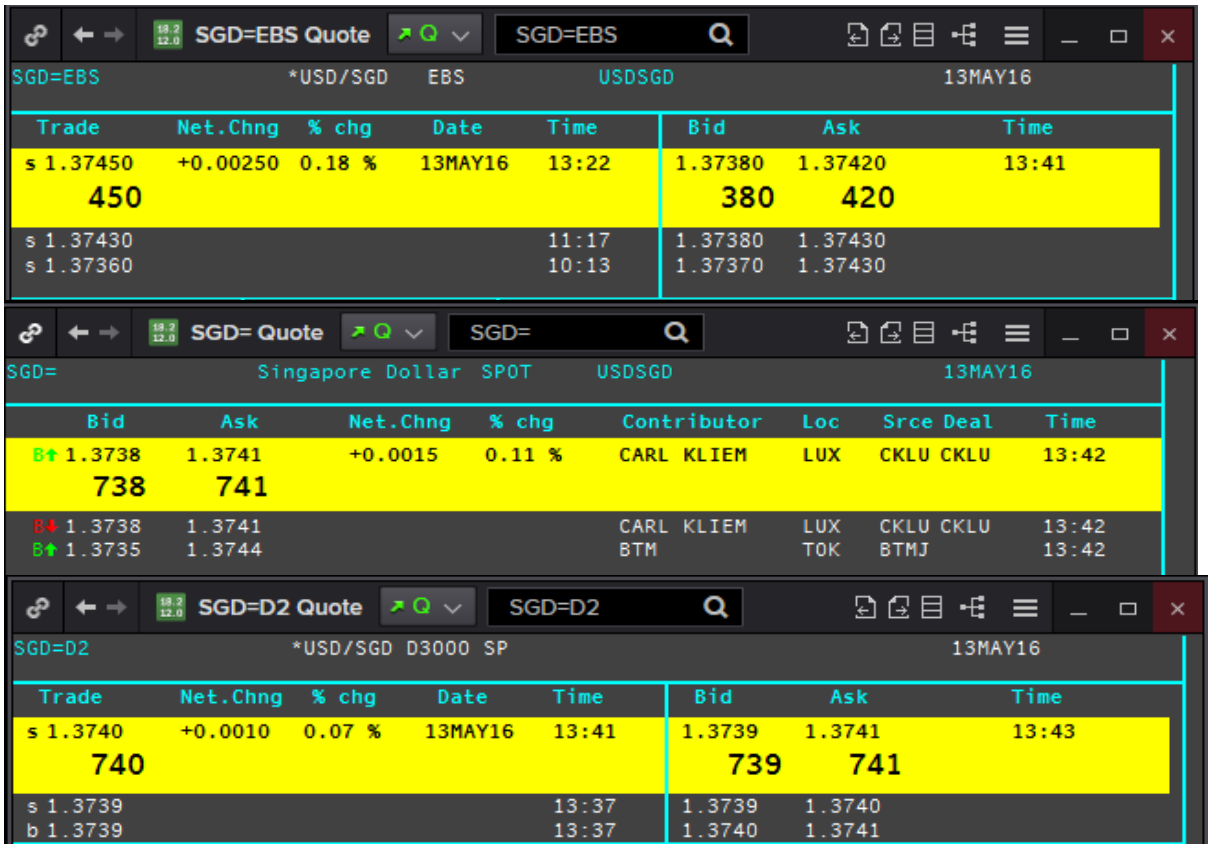
Also, if the bankers has any preferred contributor data that he would like to use, it could be customized whereas the indicative figures is merely a composite of the different figures available from Reuters list of contributors.

How to search for it on Eikon?

For **indicative data**: Press **F4** in Eikon and search for **"<CUR>="** replacing CUR with the currency code. Alternatively, **"<CUR>=ICAP"** is also an alternative indicative figure provider

For **tradable data**: Press **F4** in Eikon and search for **"<CUR>=EBS"** for Electronic Broking Services, which is a matching platform.

Alternatively, a conventional platform, can be used by: Press **F4** in Eikon and search for **"<CUR>=D2"**.



Certain currencies such as USDJPY, EURUSD, USDCHF and EURCHF are popular in EBS while the rest are mostly traded on D2, hence figures for the above currencies may be more accurate than the counterpart since it is more commonly traded.

6. FX Applications

Swap Data Repository View <SDRV>

SDRV is a reporting tool for OTC trades reported by financial institutions within the USA. The toll pulls in all declared swaps and options and this allows users to swap on all asset classes.

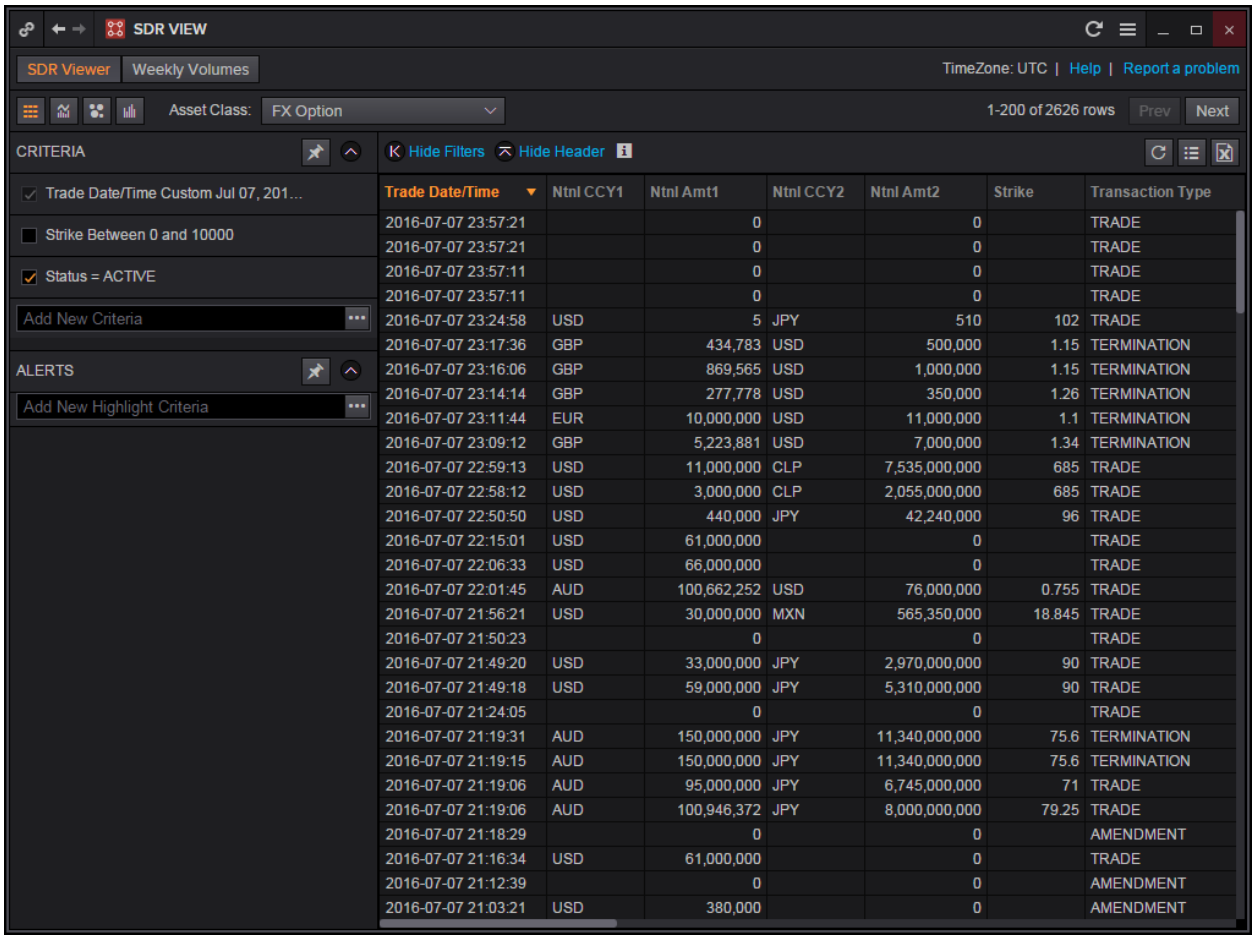
Information on this page is sourced from two repositories:

1. DTCC: The Depository Trust and Clearing Corporation.
   It is a US-based post-trade financial services company which provides clearing and settlement services to the financial markets.
2. CME: Chicago Mercantile Exchange
   It trades commodities and financial instruments using the open outcry format and the electronic trading through Globex.

In order to utilise the following page,

In the Eikon Toolbar, search for <**SDRV**> and choose from the different asset classes in order to view the trades available.

One way to view all the trades for a specific currency would be to select on the Notional Currency 1 or 2 to sort the results obtained.



Trade Date/Time	Ntnl CCY1	Ntnl Amt1	Ntnl CCY2	Ntnl Amt2	Strike	Transaction Type
2016-07-07 23:57:21		0		0		TRADE
2016-07-07 23:57:21		0		0		TRADE
2016-07-07 23:57:11		0		0		TRADE
2016-07-07 23:57:11		0		0		TRADE
2016-07-07 23:24:58	USD	5	JPY	510	102	TRADE
2016-07-07 23:17:36	GBP	434,783	USD	500,000	1.15	TERMINATION
2016-07-07 23:16:06	GBP	869,565	USD	1,000,000	1.15	TERMINATION
2016-07-07 23:14:14	GBP	277,778	USD	350,000	1.26	TERMINATION
2016-07-07 23:11:44	EUR	10,000,000	USD	11,000,000	1.1	TERMINATION
2016-07-07 23:09:12	GBP	5,223,881	USD	7,000,000	1.34	TERMINATION
2016-07-07 22:59:13	USD	11,000,000	CLP	7,535,000,000	685	TRADE
2016-07-07 22:58:12	USD	3,000,000	CLP	2,055,000,000	685	TRADE
2016-07-07 22:50:50	USD	440,000	JPY	42,240,000	96	TRADE
2016-07-07 22:15:01	USD	61,000,000		0		TRADE
2016-07-07 22:06:33	USD	66,000,000		0		TRADE
2016-07-07 22:01:45	AUD	100,662,252	USD	76,000,000	0.755	TRADE
2016-07-07 21:56:21	USD	30,000,000	MXN	565,350,000	18.845	TRADE
2016-07-07 21:50:23		0		0		TRADE
2016-07-07 21:49:20	USD	33,000,000	JPY	2,970,000,000	90	TRADE
2016-07-07 21:49:18	USD	59,000,000	JPY	5,310,000,000	90	TRADE
2016-07-07 21:24:05		0		0		TRADE
2016-07-07 21:19:31	AUD	150,000,000	JPY	11,340,000,000	75.6	TERMINATION
2016-07-07 21:19:15	AUD	150,000,000	JPY	11,340,000,000	75.6	TERMINATION
2016-07-07 21:19:06	AUD	95,000,000	JPY	6,745,000,000	71	TRADE
2016-07-07 21:19:06	AUD	100,946,372	JPY	8,000,000,000	79.25	TRADE
2016-07-07 21:18:29		0		0		AMENDMENT
2016-07-07 21:16:34	USD	61,000,000		0		TRADE
2016-07-07 21:12:39		0		0		AMENDMENT
2016-07-07 21:03:21	USD	380,000		0		AMENDMENT

Currency Performance/Value Tracker <FXPT>

Using the Currency Performance/ Value Tracker application, users can compare how a specific currency performed historically and currently. While the 3 months implied volatility implies the market's sentiments on the currency pair currently, the 3 months realised volatility is the traded volatility 3 months ago.

Hence, comparing the two figures could be beneficial to an options buyer as to whether they should buy or sell an option right now.

In the Eikon Toolbar, search **<FXPT>.**

Currency	Spot	3M Implied Vol	6M Implied Vol	1Y Implied Vol	3M Realized Vol	6M Realized Vol	1Y Realized Vol	3M Risk Reversal skew	6M Risk Reversal skew	1Y Risk Reversal skew
USDCAD	1.30	9.69	9.70	9.82	9.36	10.95	9.54	1.13	1.23	1.30
USDCHF	0.98	8.24	8.85	9.22	8.05	8.25	9.21	-1.02	-1.07	-1.02
USDJPY	100.69	12.85	12.45	11.90	14.97	13.13	10.85	-2.63	-2.60	-2.52
USDNOK	8.50	12.01	12.21	12.34	14.34	13.02	12.39	1.25	1.54	1.75
USDSEK	8.56	9.85	10.29	10.63	11.84	10.31	10.75	1.20	1.20	1.35
GBPUSD	1.29	13.80	13.30	12.76	20.64	16.45	12.73	-2.21	-2.41	-2.58
NZDUSD	0.73	13.05	13.15	13.25	13.87	14.09	13.62	-1.46	-1.76	-2.08
AUDUSD	0.75	11.71	11.95	12.25	13.51	13.23	12.25	-1.55	-1.85	-2.15
EURUSD	1.11	9.32	9.65	9.82	9.45	8.97	9.99	-1.40	-1.65	-1.86
EURAUD	1.47	10.85	11.05	11.30	9.82	11.57	13.38	0.96	1.23	1.70
EURCAD	1.44	9.78	10.09	10.47	8.25	10.84	12.03	0.17	0.20	0.25
EURCHF	1.08	6.25	6.80	7.00	5.81	5.06	5.48	-2.00	-2.10	-2.40
EURGBP	0.85	12.40	12.05	11.76	16.90	13.73	11.87	1.77	1.76	1.82
EURJPY	111.45	14.00	13.65	13.30	17.66	14.29	11.71	-3.15	-3.35	-3.50
EURNOK	9.41	8.70	8.85	8.93	8.17	8.94	9.77	1.13	1.32	1.49
EURNZD	1.53	11.65	11.61	12.18	10.60	11.53	14.01	0.79	1.07	1.57
EURSEK	9.48	6.60	6.91	7.17	6.08	5.93	6.40	0.69	0.71	0.75
GBPAUD	1.72	13.35	13.22	13.45	18.12	15.01	13.18	-1.55	-1.25	-0.90
GBPCAD	1.69	12.43	12.20	11.90	17.89	14.77	12.33	-2.13	-2.13	-2.15
GBPCHF	1.27	13.21	12.94	12.76	21.11	16.65	13.47	-3.05	-3.08	-3.13
GBPJPY	130.40	18.63	17.38	16.30	33.11	25.46	19.05	-4.33	-4.58	-4.92
CHFJPY	102.76	13.40	13.05	12.68	16.06	13.16	10.90	-1.35	-1.40	-1.48
AUDCAD	**0.98**	**8.68**	**8.82**	**8.95**	**9.07**	**8.68**	**9.07**	**-0.38**	**-0.50**	**-0.50**
AUDCHF	0.74	11.44	11.96	12.35	12.49	13.24	14.00	-2.08	-2.29	-2.60

For example,

Here, the 3M implied volatility for USDCAD is 9.69 while the 3M realised volatility is 9.36.

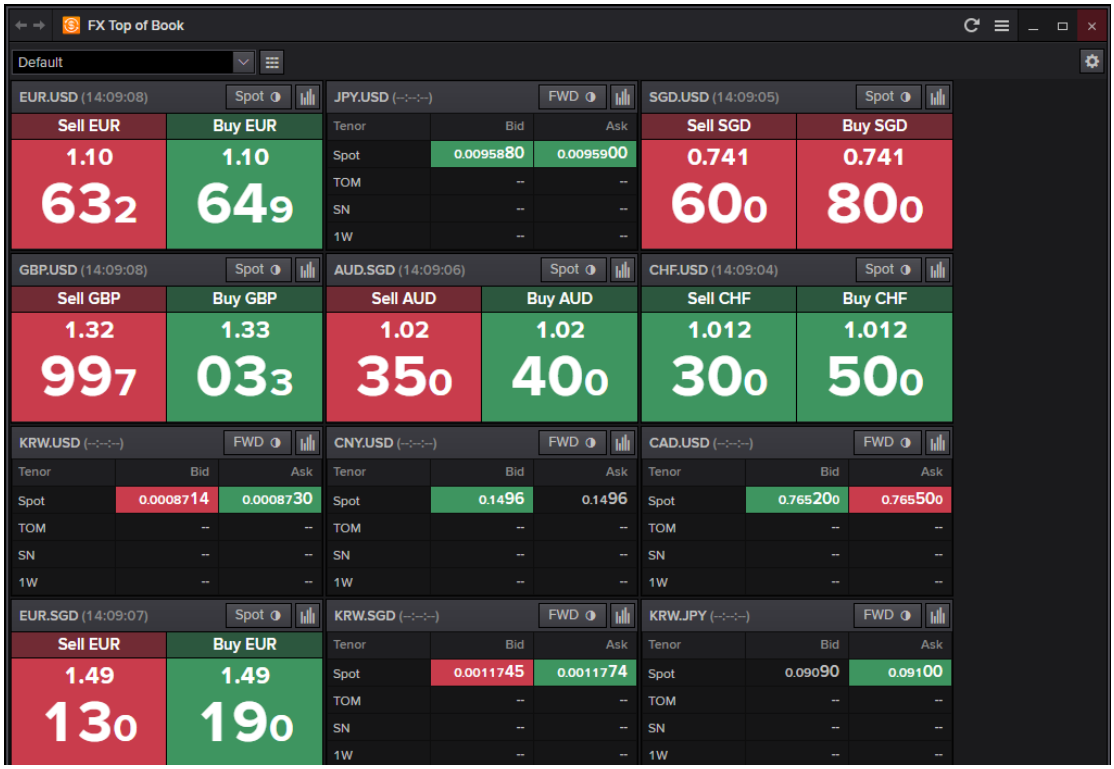
Hence the currency pair USDCAD is currently more volatile as compared to 3M ago.

FX Top of Book <TOB>

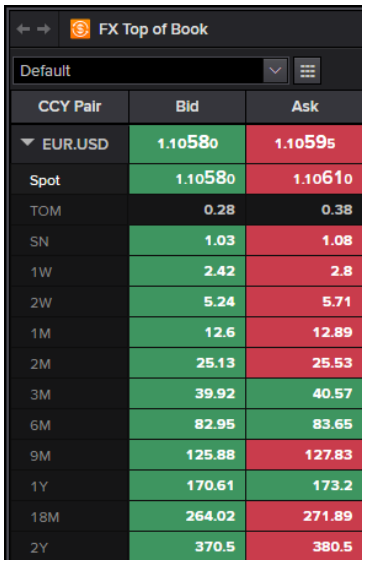
An application which enables users to view different currency pairs as well as their corresponding spot and forwards is the FX Top of Book **<TOB>** Application.

In the Eikon Toolbar, search **<TOB>**.

Press  in order to add new profiles (groups of currencies) or different currencies into a group.



Alternatively select  for the following view of a table of spot and forward figures for the currencies within the profile group.



Part 6: Money Market

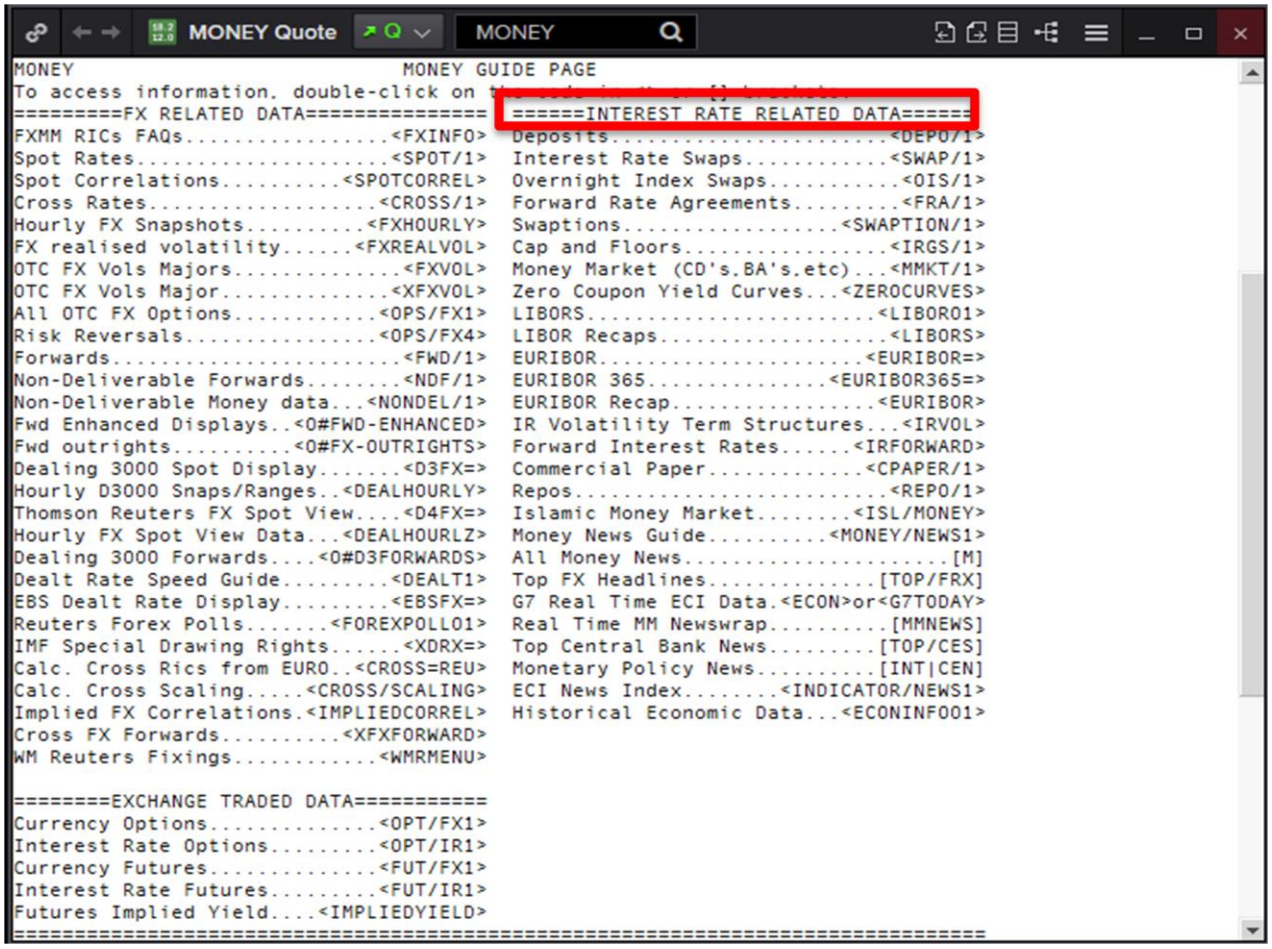
1. Overview of the Money Market

The money market facilitates the trade of short-term loans between banks and other financial institutions. Instruments traded in this market have high liquidity and short maturities (usually less

Financial assets traded on this market, than a year), including stocks and bonds will mature in one year or less. Financial institution, corporations, governments and the US treasury are active in the money markets as they will attempt to adjust their short term portfolios.

Information on these markets as well as interest rate related data can be obtained through:

Press **F4**, enter **<MONEY>.**



We will be discussing the following,

1. Forward Rate Agreements (FRA)
2. Futures (STIR and ED)
3. Interest Rate Swaps
4. Basis Swaps
5. Implied Deposits (to be covered as a case study)
6. Cross Currency Swap (to be covered as a case study)

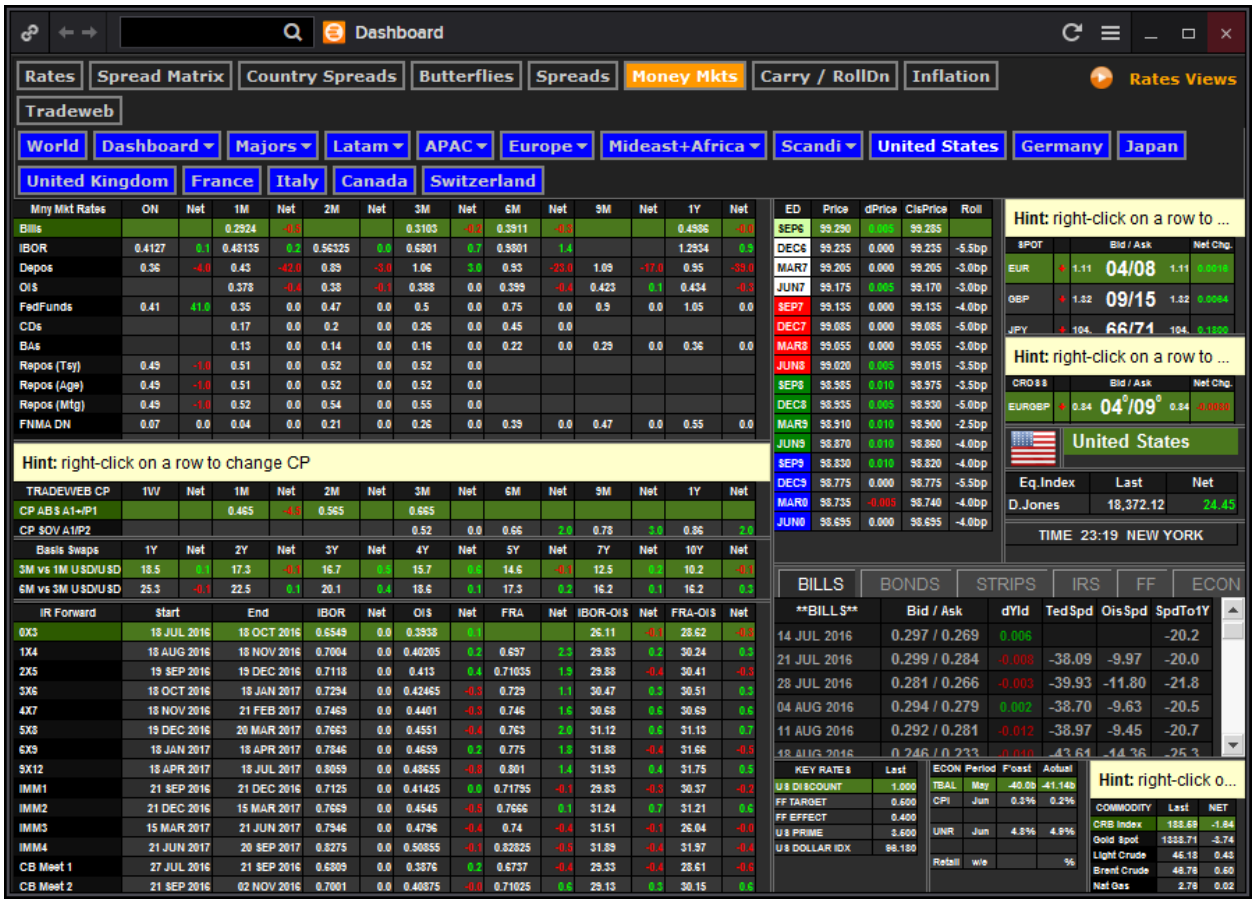
Rates View Money Market

The Rates Views and Money Market pages enable users to have an overview of all different information commonly used in the money market.

For example, here key money market rates as well as basic swaps and interest rate forwards for different tenors could be found.

In the Eikon Toolbar, search **<RVMM>** in order to open the application.

One can also search which country or sector they would like to view in particular.



2. Cost of Borrowing

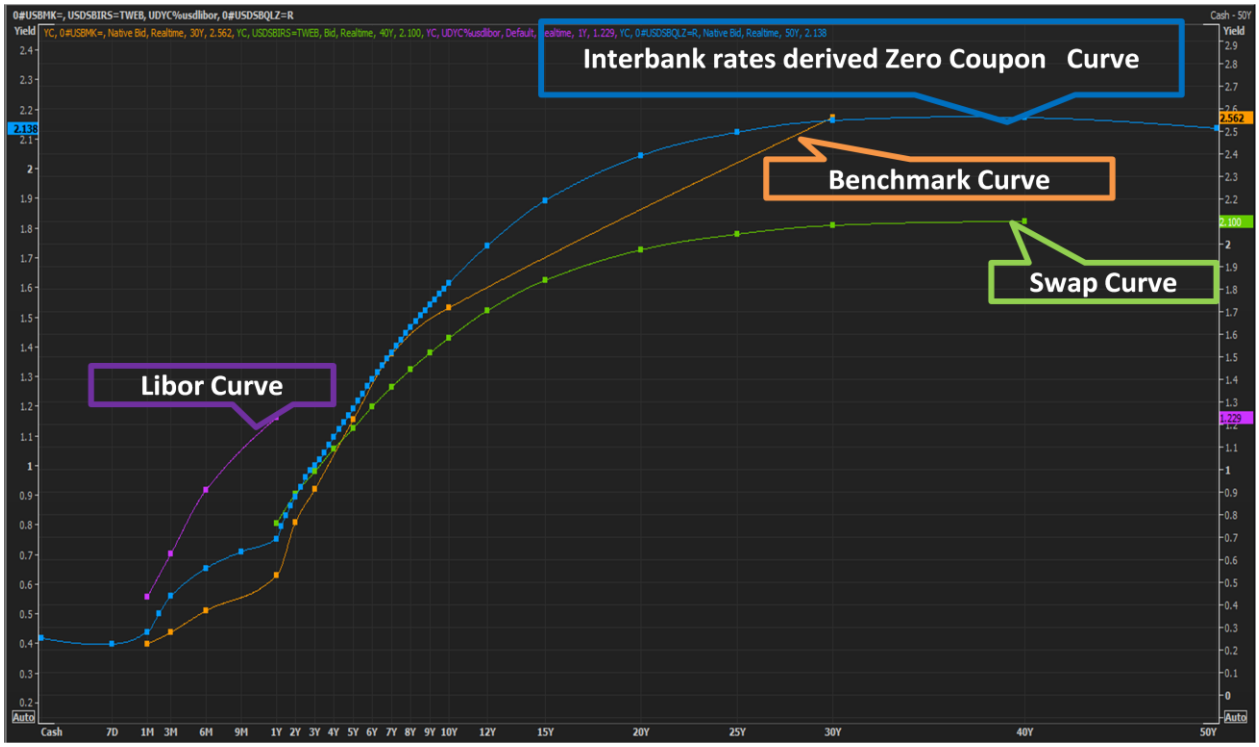
Zero Coupon Yield Curve

Before a company decides which hedging instrument they would like to employ, it would be advisable to first plot their zero coupon curve in order to determine their cost of borrowing. That way, any rate above the curve would indicate a profit.

What is a Zero Coupon Yield Curve?

The zero coupon curve acts as an interest rate proxy because it provides a continuous stream of interest rates for both short and long term periods.

Furthermore, it is usually constructed using real time tradable liquid financial instruments and is coupon free.



Here are some commonly used graphs,

Benchmark Curve: Represents the Cost of Borrowing for the Government

LIBOR Curve: Short term 1 year interbank borrowing curve

Swap Curve: Long term Interbank Borrowing Curve

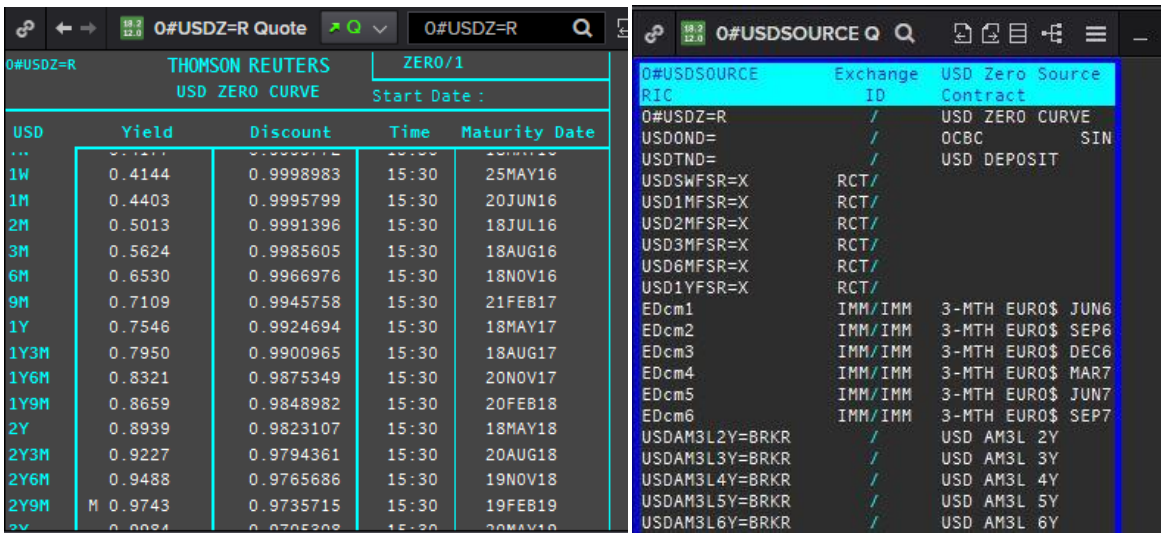
Zero Coupon Curve: An example of the zero coupon curve (here an interbank rate derived curve) has been provided above.

In this case, the zero coupon curve is related to the swap curve and the Libor curve (interbank borrowing rates).

For example, a bond's yield to maturity could be found by taking the cash-flow weighted average of the interbank rates derived from the zero coupon curve.

How to obtain indicative data on *interbank-rates* derived Zero coupon rates?

1. In Eikon, press **F4** to open the **Quote App**
2. Type <USDZ=R> and press F3 → <0#USDZ=R>
3. To check the sources of data, type <**0#USDSOURCE>**



0#USDZ=R Quote | 0#USDZ=R

0#USDZ=R — THOMSON REUTERS — USD ZERO CURVE — ZERO/1 — Start Date :

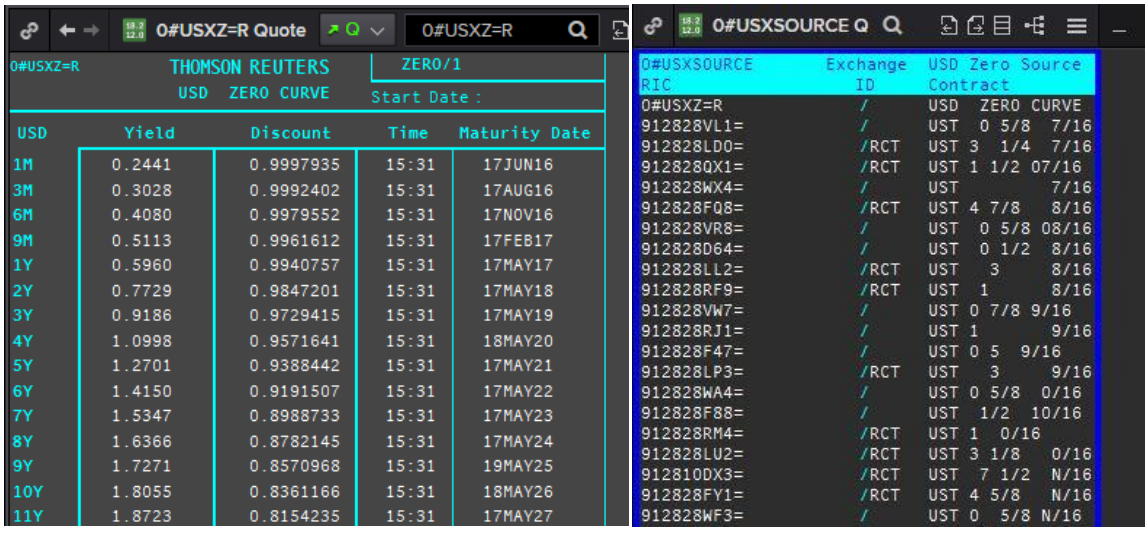
USD	Yield	Discount	Time	Maturity Date
1W	0.4144	0.9998983	15:30	25MAY16
1M	0.4403	0.9995799	15:30	20JUN16
2M	0.5013	0.9991396	15:30	18JUL16
3M	0.5624	0.9985605	15:30	18AUG16
6M	0.6530	0.9966976	15:30	18NOV16
9M	0.7109	0.9945758	15:30	21FEB17
1Y	0.7546	0.9924694	15:30	18MAY17
1Y3M	0.7950	0.9900965	15:30	18AUG17
1Y6M	0.8321	0.9875349	15:30	20NOV17
1Y9M	0.8659	0.9848982	15:30	20FEB18
2Y	0.8939	0.9823107	15:30	18MAY18
2Y3M	0.9227	0.9794361	15:30	20AUG18
2Y6M	0.9488	0.9765686	15:30	19NOV18
2Y9M	M 0.9743	0.9735715	15:30	19FEB19

0#USDSOURCE Q

0#USDSOURCE RIC	Exchange ID	USD Zero Source Contract
0#USDZ=R	/	USD ZERO CURVE
USDOND=	/	OCBC SIN
USDTND=	/	USD DEPOSIT
USDSWFSR=X	RCT/	
USD1MFSR=X	RCT/	
USD2MFSR=X	RCT/	
USD3MFSR=X	RCT/	
USD6MFSR=X	RCT/	
USD1YFSR=X	RCT/	
EDcm1	IMM/IMM	3-MTH EURO$ JUN6
EDcm2	IMM/IMM	3-MTH EURO$ SEP6
EDcm3	IMM/IMM	3-MTH EURO$ DEC6
EDcm4	IMM/IMM	3-MTH EURO$ MAR7
EDcm5	IMM/IMM	3-MTH EURO$ JUN7
EDcm6	IMM/IMM	3-MTH EURO$ SEP7
USDAM3L2Y=BRKR	/	USD AM3L 2Y
USDAM3L3Y=BRKR	/	USD AM3L 3Y
USDAM3L4Y=BRKR	/	USD AM3L 4Y
USDAM3L5Y=BRKR	/	USD AM3L 5Y
USDAM3L6Y=BRKR	/	USD AM3L 6Y

How to obtain indicative data on *government bond-yield* derived Zero coupon rates?

1. In Eikon, press **F4** to open the **Quote App**
2. Type <USDZ=R> and press F3 → <0#USDX=R>
3. To check the sources of data, type <**0#USXSOURCE>**



0#USXZ=R Quote | 0#USXZ=R

0#USXZ=R — THOMSON REUTERS — USD ZERO CURVE — ZERO/1 — Start Date :

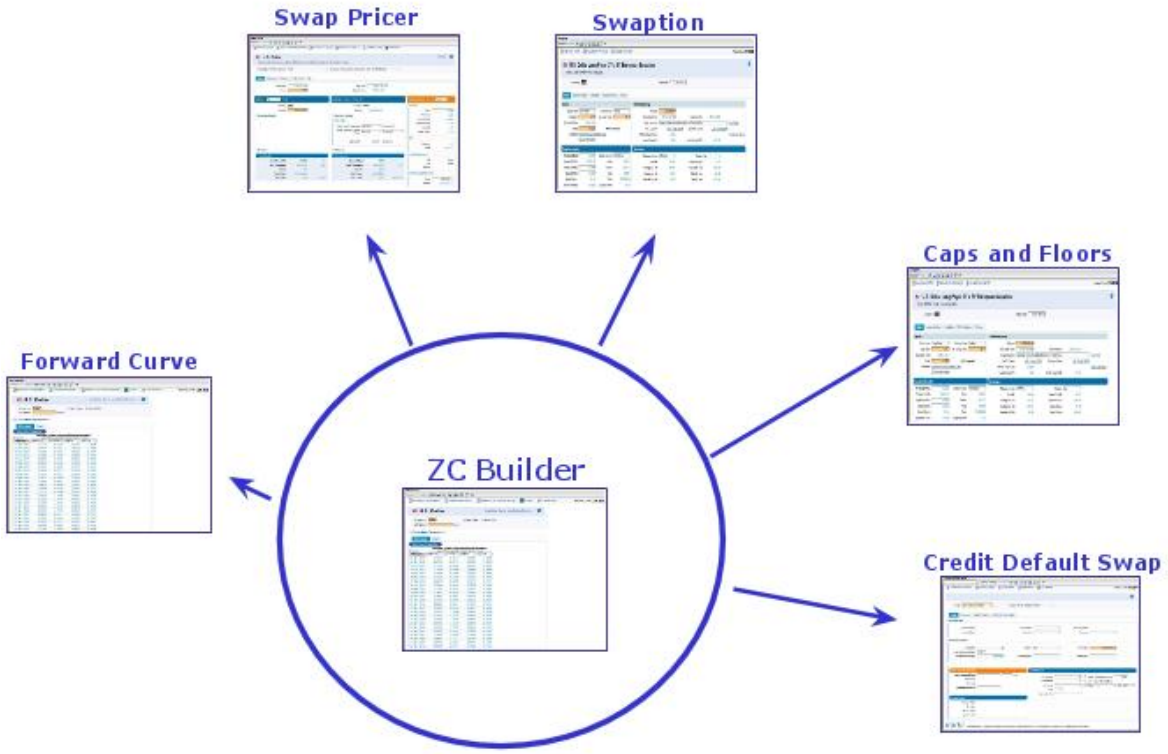
USD	Yield	Discount	Time	Maturity Date
1M	0.2441	0.9997935	15:31	17JUN16
3M	0.3028	0.9992402	15:31	17AUG16
6M	0.4080	0.9979552	15:31	17NOV16
9M	0.5113	0.9961612	15:31	17FEB17
1Y	0.5960	0.9940757	15:31	17MAY17
2Y	0.7729	0.9847201	15:31	17MAY18
3Y	0.9186	0.9729415	15:31	17MAY19
4Y	1.0998	0.9571641	15:31	18MAY20
5Y	1.2701	0.9388442	15:31	17MAY21
6Y	1.4150	0.9191507	15:31	17MAY22
7Y	1.5347	0.8988733	15:31	17MAY23
8Y	1.6366	0.8782145	15:31	17MAY24
9Y	1.7271	0.8570968	15:31	19MAY25
10Y	1.8055	0.8361166	15:31	18MAY26
11Y	1.8723	0.8154235	15:31	17MAY27

0#USXSOURCE Q

0#USXSOURCE RIC	Exchange ID	USD Zero Source Contract
0#USXZ=R	/	USD ZERO CURVE
912828VL1=	/	UST 0 5/8 7/16
912828LD0=	/RCT	UST 3 1/4 7/16
912828QX1=	/RCT	UST 1 1/2 07/16
912828WX4=	/	UST 7/16
912828FQ8=	/RCT	UST 4 7/8 8/16
912828VR8=	/	UST 0 5/8 08/16
912828D64=	/	UST 0 1/2 8/16
912828LL2=	/RCT	UST 3 8/16
912828RF9=	/RCT	UST 1 8/16
912828VW7=	/	UST 0 7/8 9/16
912828RJ1=	/	UST 1 9/16
912828F47=	/	UST 0 5 9/16
912828LP3=	/RCT	UST 3 9/16
912828WA4=	/	UST 0 5/8 0/16
912828F88=	/	UST 1/2 10/16
912828RM4=	/RCT	UST 1 0/16
912828LU2=	/RCT	UST 3 1/8 0/16
912810DX3=	/RCT	UST 7 1/2 N/16
912828FY1=	/RCT	UST 4 5/8 N/16
912828WF3=	/	UST 0 5/8 N/16

User-defined Yield Curves

Even though **Eikon** has pre-defined yield curves available for use in the following applications, certain users may still choose to rely on their own **user-defined yield curve** which can be imputed into the different applications on the Eikon App Platform.



To do so, it would be possible to utilize the **ZC Builder (ZCBR)** on Eikon in order to generate a customized curve with the user's preferred list of contributors.

ZC Builder could be used to

- Build curves for different currencies
- Add spreads
- Select different methods to construct the curve
- Choose different types of rates to calculate the curve
- Select specific instruments to build the curve (deposits, fixed rates, swaps, futures and bonds)
- View Charts

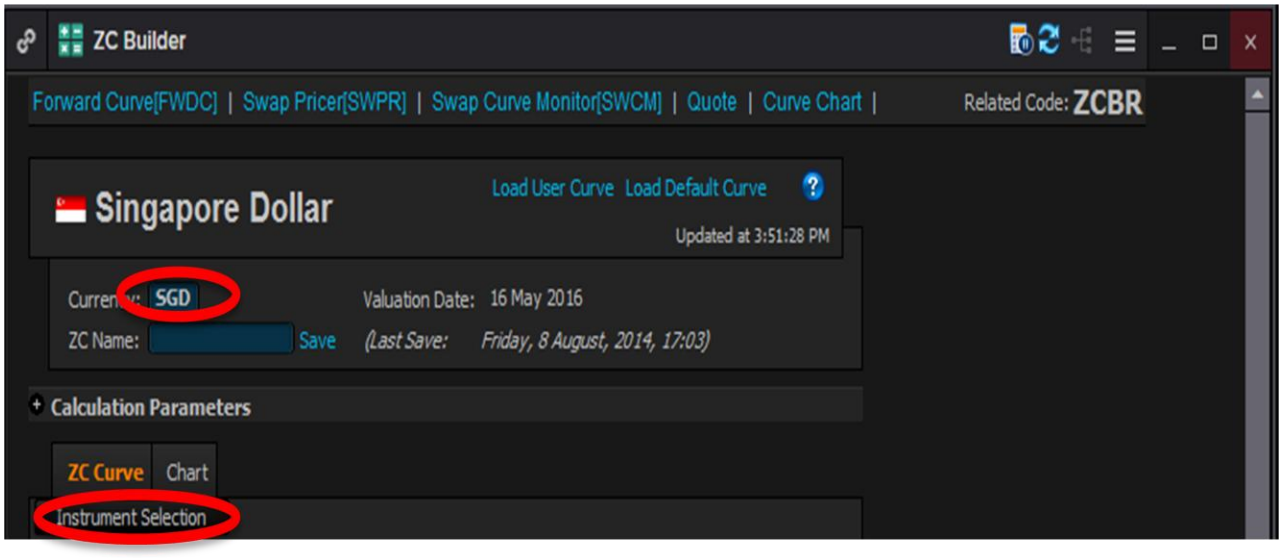
The calculator is based on the bootstrapping method; knowing one spot rate to begin with, the spot rate for the next period is calculated; and knowing two spot rates, the third spot rate is performed.

How to customize your own user-defined yield curve? <ZCBR>

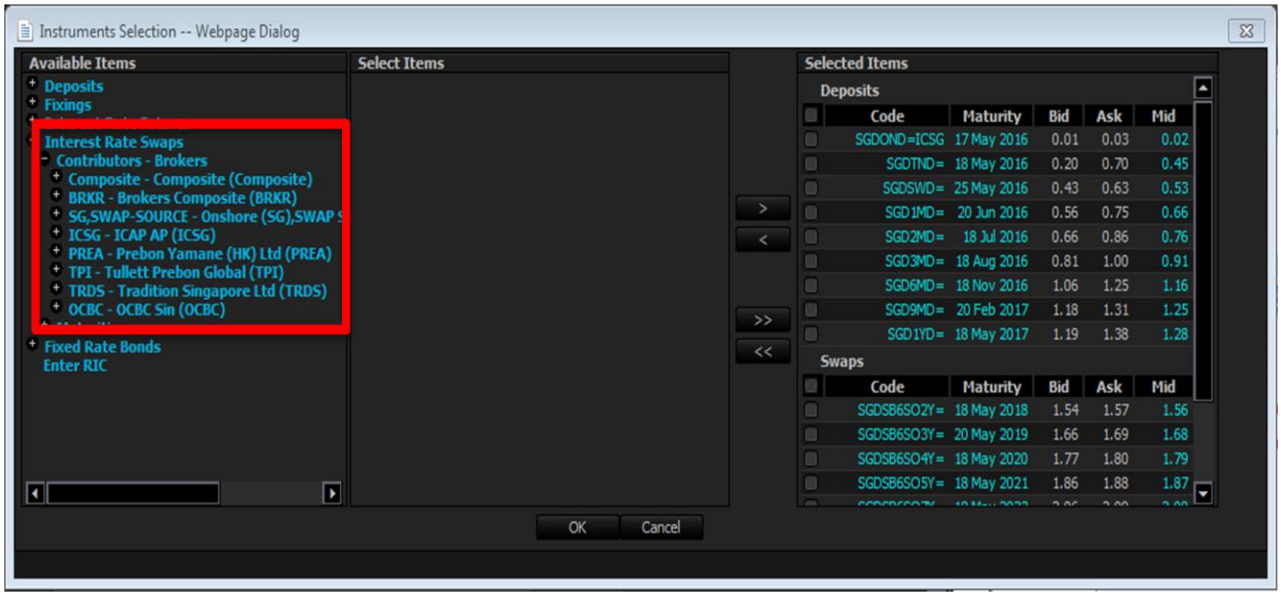
1. In the Eikon Toolbar, type **<ZCBR>** (Zero Curve Builder)

2. Key in the currency needed, (i.e. <**SGD**>)

3. If you wish to choose the instruments used, click on "**Instrument Selection**"



4. Select the futures, bonds or swaps desired from the list by screening through the contributors list.



5. Save the curve and use it in different applications, e.g. Swap Pricer, Swaption, Credit Default Swap, Forward Curve etc.

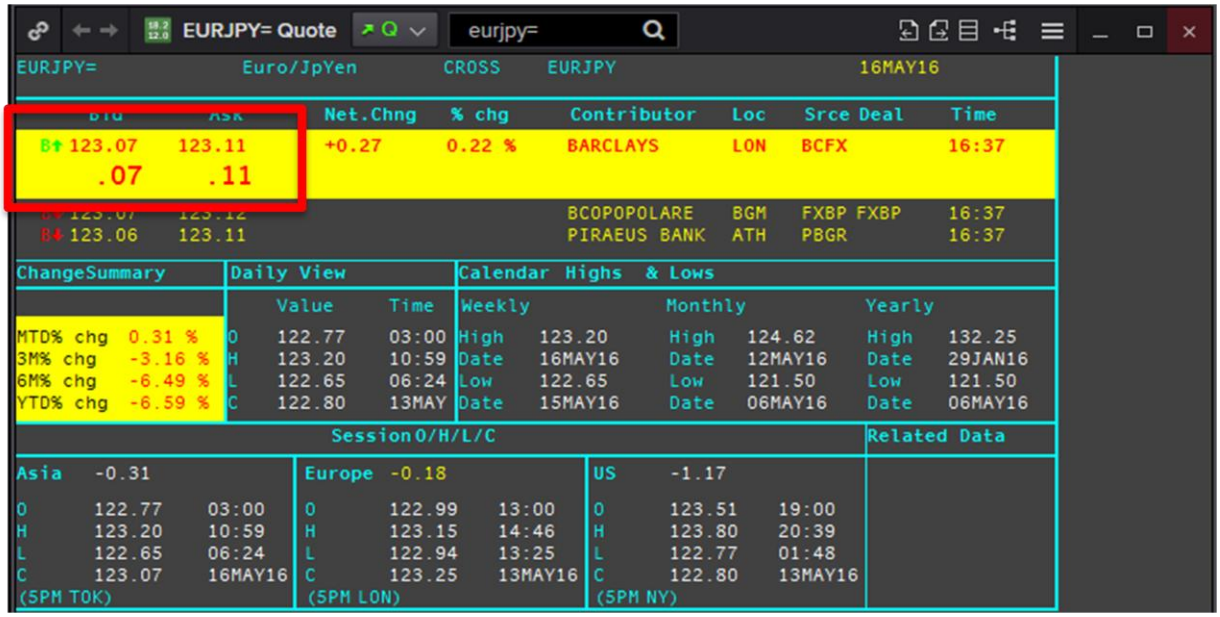
3. Cross Exchange Rates

Sometimes, a pair of currencies not calculated against the USD may be required. E.g. **EURJPY**

In this case,

1. Press **F4**.

2. Enter <EURJPY=>



Certain exotic pairs such as CNYSGD (in SGD per CNY) may be used. In this case, searching for it normally would not yield a result. Hence, the following search could be done.

1. Press **F4**

2. Enter <CNYSGD=R>

3. The “R” here represents a cross performed by Reuters (Eikon) since it does not exist and hence constitutes secondary data.

4. Spot Deposits

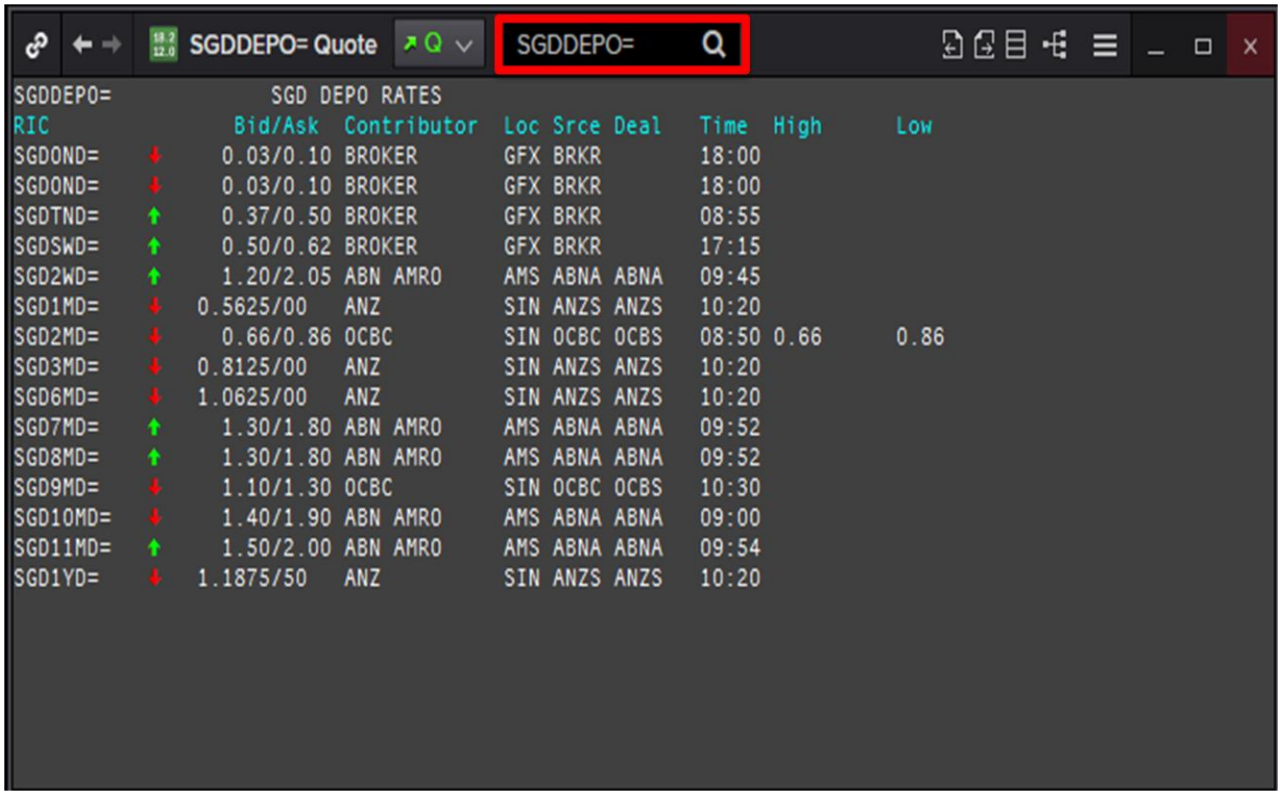
Starting from the simplest money market instrument would be a simple spot deposit.

Through these rates, an investor could invest in the money market for a short period of time (overnight or tomnext) or could invest for a longer period (up to a year). The rates are quoted in the typical bid/ask numbers for use.

Press **F4** and type **<SGDDEPO=>**

The three letter code denominating the currency of interest could easily be changed to the one necessary.

The tenors of the deposits could be chosen (overnight, tomnext, spot week etc)



SGDDEPO=		SGD DEPO RATES						
RIC		Bid/Ask	Contributor	Loc	Srce	Deal	Time	High	Low
SGDOND=	↓	0.03/0.10	BROKER	GFX	BRKR		18:00		
SGDOND=	↓	0.03/0.10	BROKER	GFX	BRKR		18:00		
SGDTND=	↑	0.37/0.50	BROKER	GFX	BRKR		08:55		
SGDSWD=	↑	0.50/0.62	BROKER	GFX	BRKR		17:15		
SGD2WD=	↑	1.20/2.05	ABN AMRO	AMS	ABNA	ABNA	09:45		
SGD1MD=	↓	0.5625/00	ANZ	SIN	ANZS	ANZS	10:20		
SGD2MD=	↓	0.66/0.86	OCBC	SIN	OCBC	OCBS	08:50	0.66	0.86
SGD3MD=	↓	0.8125/00	ANZ	SIN	ANZS	ANZS	10:20		
SGD6MD=	↓	1.0625/00	ANZ	SIN	ANZS	ANZS	10:20		
SGD7MD=	↑	1.30/1.80	ABN AMRO	AMS	ABNA	ABNA	09:52		
SGD8MD=	↑	1.30/1.80	ABN AMRO	AMS	ABNA	ABNA	09:52		
SGD9MD=	↓	1.10/1.30	OCBC	SIN	OCBC	OCBS	10:30		
SGD10MD=	↓	1.40/1.90	ABN AMRO	AMS	ABNA	ABNA	09:00		
SGD11MD=	↑	1.50/2.00	ABN AMRO	AMS	ABNA	ABNA	09:54		
SGD1YD=	↓	1.1875/50	ANZ	SIN	ANZS	ANZS	10:20		

These figures are used in FRA Pricing through the forward formula as shown later on.

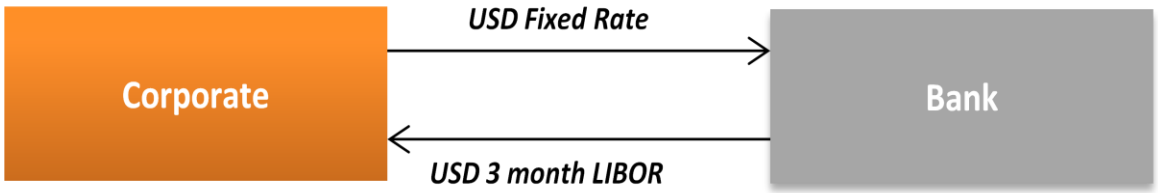
5a. Forward Rate Agreements

What is an FRA agreement?

A FRA agreement is a forward agreement between parties that determines the 1. Currency exchange rate or 2. Rate of interest that is to be paid or received on an obligation beginning at a future start date.

FRAs are similar to swaps except payment is only made once at maturity and not periodically. Furthermore, there is no exchange of principals and only the exchange of either the difference in exchange rates, or the difference in interest rates. In this case, we will focus more on the exchange of interest rates.

The diagram below shows the typical FRA agreement



Here, the corporate treasurer will pay a bank a fixed USD rate while the bank will pay a floating rate. At the end of the tenor, a differential on the notional amount will be paid to the profiting party.

For example,

A client will receive payment in 9 months but needs to pay his suppliers in 12 months, hence he wants to purchase a 9 month forward start, 3 month period FRA.

What this means is that the client wants to buy a forward which starts 9 month from today, which will last for 3 months. Hence, the contract will conclude in a total of 12 months.

A buyer of an FRA would lock in a fixed rate while the seller would pay a floating rate.

From here, the concept of **implied forward rate** arises.

There are two ways to find this implied forward rate using Eikon,

1. Forward Rate Formula

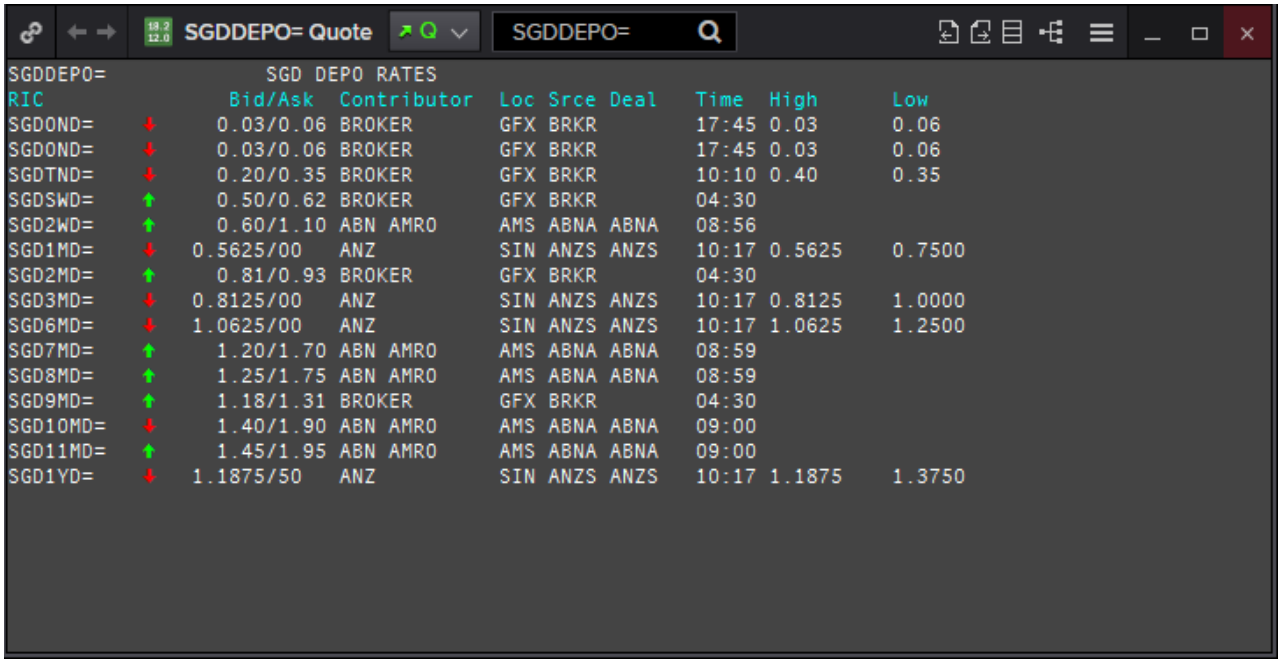
2. FRA Pricing Calculator

Both methods are only possible because the contract is concluded today and all the rates are agreed upon the trade date.

Forward Rate Formula

By using the forward rate formula, there is an underlying assumption that there is an auto rollover. What this means is that, using our previous example, despite the contract only beginning 9 months from today, the interest rate still takes into account the forward rate for the 9 months prior to the start of the FRA's 3 month tenor.

Hence, similar to the spot deposit, the following steps could be performed



Press **F4** in Eikon, type in **<SGDDEPO=>** for a FRA in SGD.

Retrieve the data for the 9 months and 12 months deposit rates (the date from which the tenor begins and the period when the FRA ends)

(1 + 12 months Bid x α) = (1 + 9 months Bid x β) (1 + 9 months FRA x δ)

Where α, β and δ are the Actual number of days/ 360 or 365.

Also, note that **β + δ = α**

Whether it is 360 or 365 could be obtained by going to the background information page and looking at the <**Domestic Day Basis**>

While the figures for the 12 and 9 month bid can be obtained from the table, the 3month bid has to be calculated.

From the above figure, the 9 month bid is 1.18% and the 12 month bid is 1.1875%. Hence the implied bid for 3 months can be calculated.

Note that the figure will be different from the figure in the table as this is a mere indicative figure.

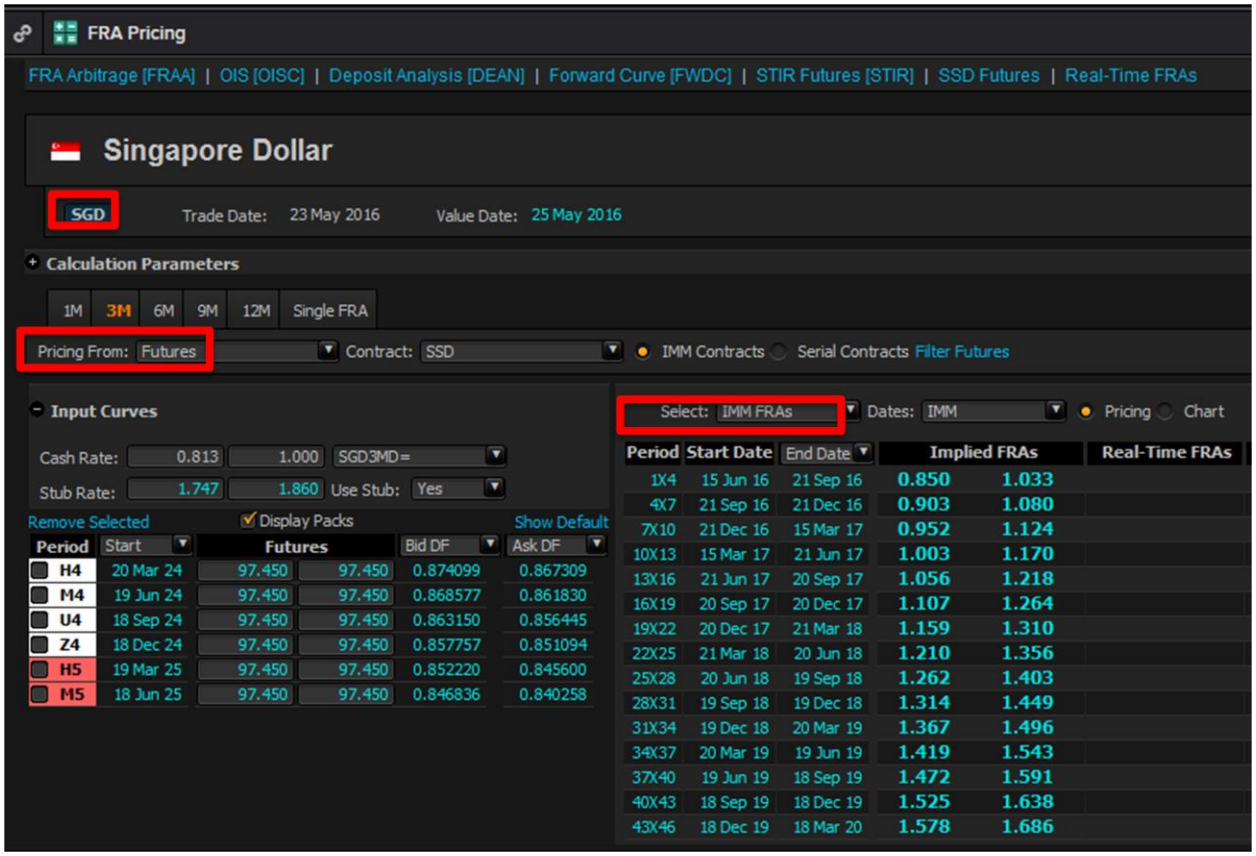
How to Price an FRA?

Eikon uses 2 main ways to price a FRA.

1. Futures

2. Zero Coupon Curve

In the Eikon Toolbar, search **<FRAP>** in order to open the FRA Pricing Caluclator.



Here, enter the required currency as well as the method of pricing and the time periods necessary.

IMM Dates Convention

H= March
M= June
U = September
Z = December

These are the months that FRA contracts usually trade (each with 3 months tenors). Hence, although FRAs can commonly ne traded in almost all months in a year, predominantly, a high number of trades occur during these months.

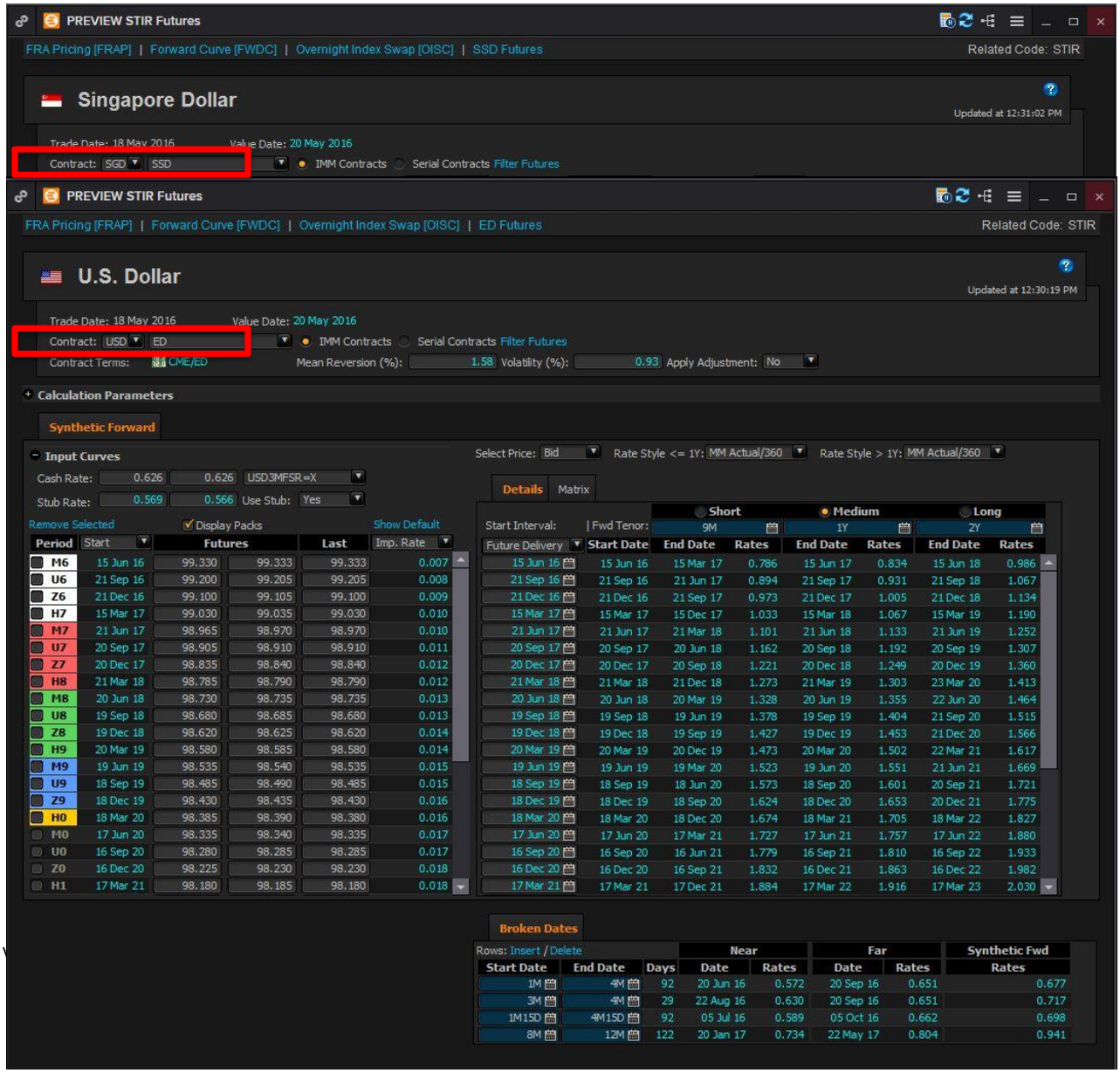
Implied FRAs is the bid and ask rate of interest that the FRA predict will be the spot rate at the date of maturity and hence would be the values used to trade.

5b. STIR Futures

STIR Futures (Short Term Interest Rate Futures) work in the same way as Forward Rate Agreements (FRAs) with one key difference.

Whereas FRAs are bought in the over the counter market and can be customized, STIR futures are exchange traded and hence cannot be customized.

In the Eikon Toolbar, search **<STIR>** in order to open the following application and enter the specific currency to find the futures available.



Futures usually trade during the IMM dates of March, June, September and December.

When hovering over the month in the **ED** Page in Quotes, (Press F4, type "**ED:**" and hit F3, a code such as EDZ6 could be seen. Here, Z is the month code and 6 represents the year (in this case 2016).

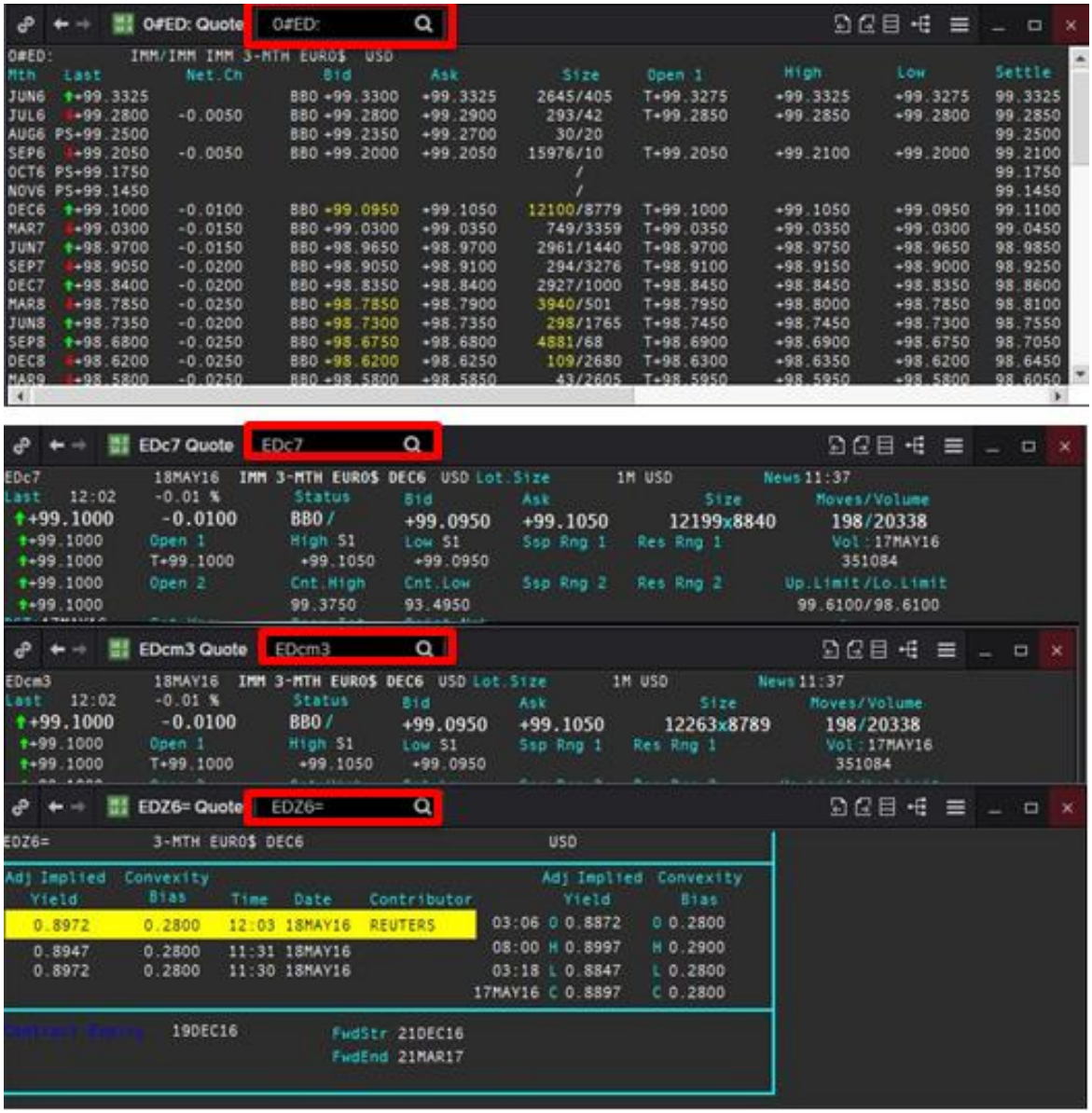
However, this is not the only way to generate information about the details of that contract. There are three different ways for us to generate the information.

<EDZ6:>: Where Z is the month code and 6 is the last digit of the year

<EDcm3>: These are for IMM dates (the next quarterly contract) being cm1)

<EDc1>: These are for monthly contracts (the nearest monthly contract)

If <EDZ6=> is typed, a more detailed page could be obtained, as seen from the picture.

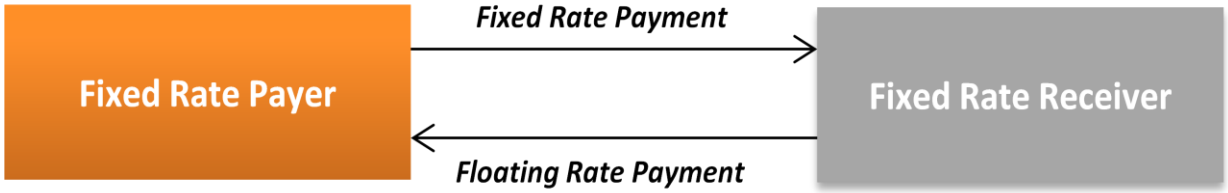


6. Interest Rate Swaps (IRS)

What is an Interest Rate Swap?

An interest rate swap is a derivative in which one party exchanges a stream of **fixed** interest payments for another party's stream of **floating** cash flows.

It is a financial derivative and can be explained through the chart below,



Some common floating rate indexes often used include the USD 3m Libor, KRW 91d CD, AUD 3m Bank Bill and CNY 7d Repo.

Conventions

There are certain terminologies utilized in IRS.

Through market convention, the counterparty paying the fixed rate is the "payer" (while receiving the floating rate) and the counterparty receiving the fixed rate is the "receiver" (while paying the floating rate).

Hence, the convention is to quote the payer and receiver in terms of the fixed rate.

Also, in cases where the IRS lasts shorter than a day, the day count convention of the currency will be used. (refer to background info of country)

Note: The difference between the Money Market and Zero Coupon Curve convention

Zero Coupon Curve:

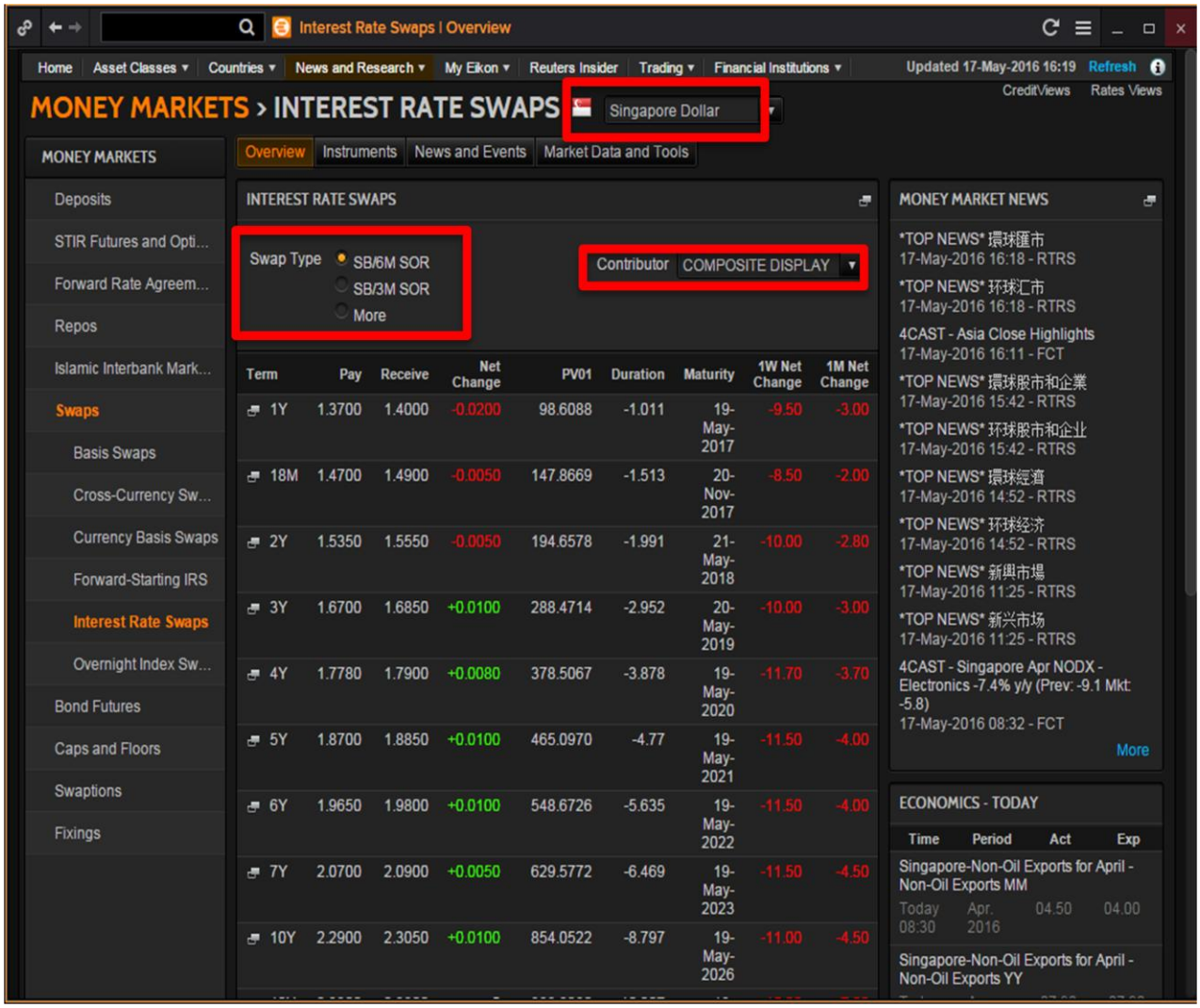
Notional x <1+ (ZC rate)>$^{Actual/365}$

Money Market:

Notional x <1 + (LIBOR) x Actual Number of Days/360>

The MM could be seen as an approximation of the ZC rate.

How to get indicative data on IRS Figures?

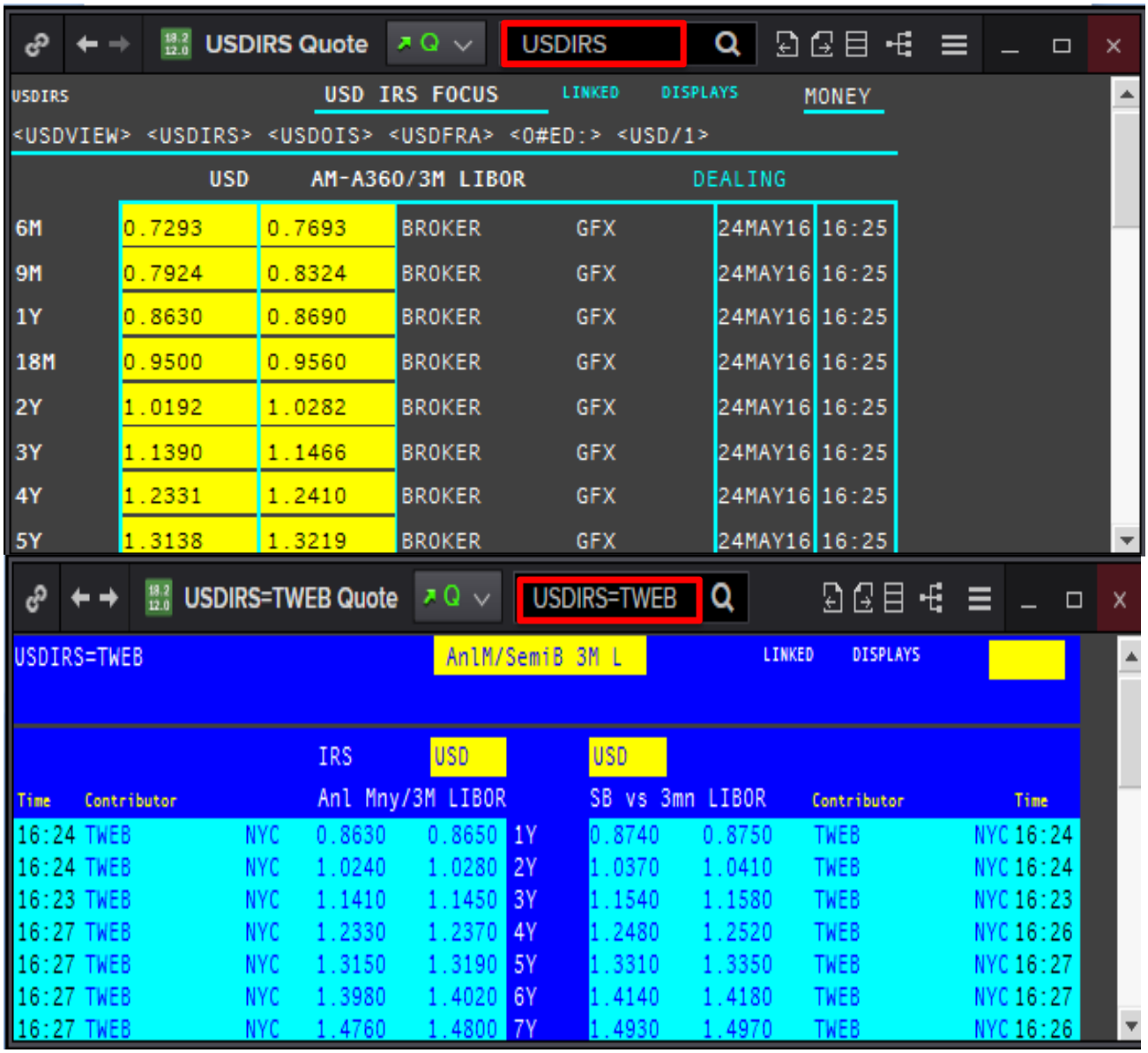


On the home page of **Eikon**, navigate through the following

Asset Classes>Money Markets> Swaps> Interest Rate Swaps

Change the Currency, Swap type and contributor as needed.

How to get data on IRS Figures?



To get indicative and tradable figures for commonly traded IRS such as those in USD, Eikon can deliver quotes for bid and ask numbers.

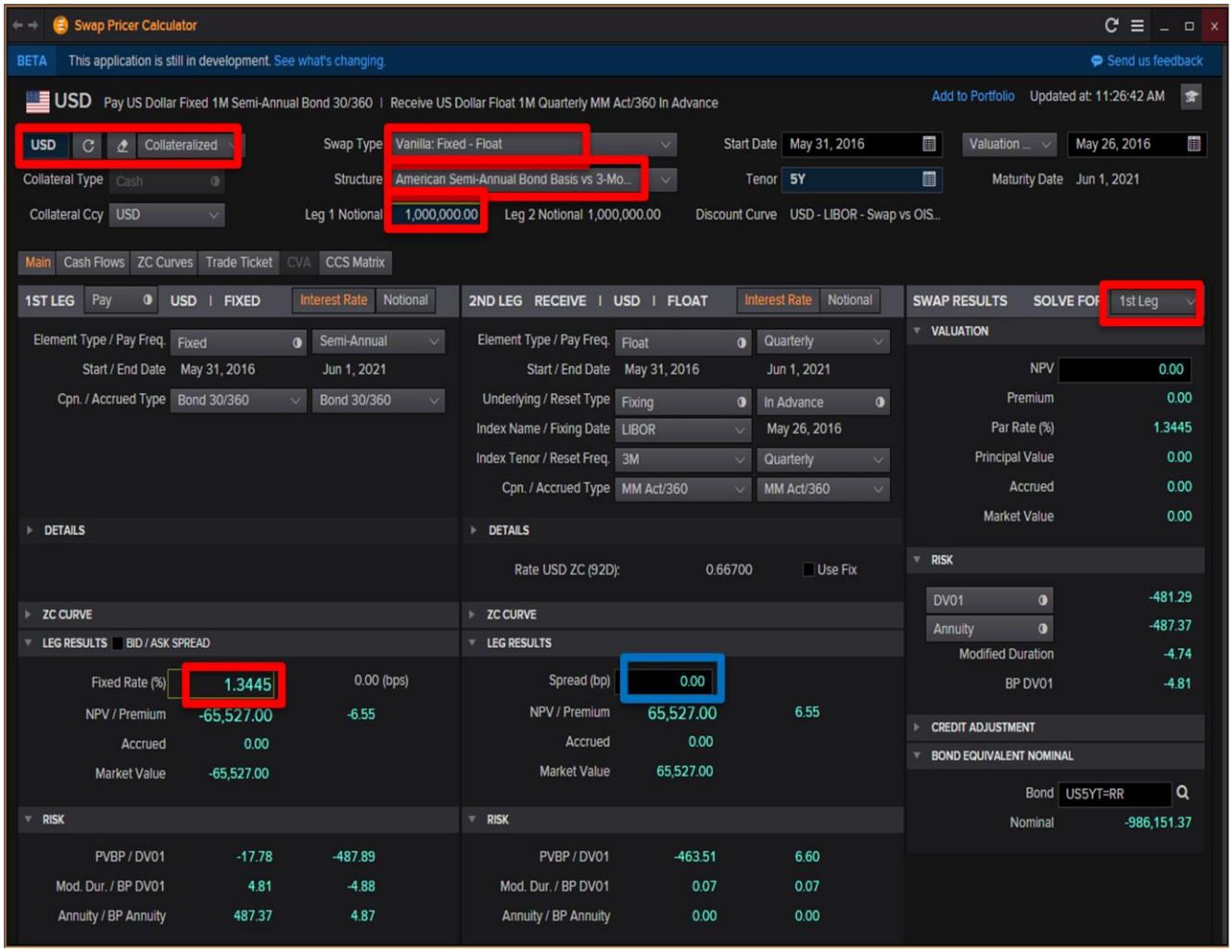
Press **F4** and type

<USDIRS> (for indicative and composite numbers)

<USDIRS=TWEB> (for tradable numbers)

How to price a new IRS deal (Eikon)

One way to price a new IRS deal is to use the Swap Pricer to set the different parameters in order to generate the fixed rate which should be paid by the fixed rate payer.



In the Eikon Toolbar, type <**SWPR**> (PREVIEW SWPR)

As shown above, set the necessary parameters for

1. Currency type (must be collateralized as per new FRS specifications0
2. Swap Type
3. Structure
4. Notional
5. Solving for 1st Leg (Payer of fixed rate in this case)

See the fixed rate for today and the market value of the IRS today.

If a spread is to be imposed, it could be included as shown in the blue box above.

How to price a new IRS deal (Eikon Excel)

If you do not wish to use SWPR in order to calculate your figures, the other method is as follows.

1. Construct a zero curve and calculate the discount factors

2. Calculate the implied forward rates from the zero rates and identify the cash flows for the floating leg and calculate the total NPV

3. Calculate the Swap Rate

Below is a spreadsheet which could be performed on Eikon Excel.

Today	25 May, 2016								
Currency	USD								
Calendar	USA								
Notional	$1,000,000								
Payment Frequency	6M								
			Cost of Borrowing %			Fixing (or zero coupon rate) and			
Floating Rates Table	Start date	End date	Zero Coupon Rates %	Discount Factors	Period	Implied forward interest rates	Cashflows	Discounted Cashflows or Present Values	
6M	27 May, 2016	28 November, 2016	0.9752	0.9950276	0x6	0.9682%	$4,975.22	$4,950.48	
1Y	28 November, 2016	30 May, 2017	1.0911	0.9891480	6x12	1.2123%	$6,162.68	$6,095.81	
1Y6M	30 May, 2017	30 November, 2017	1.1788	0.9824492	12x18	1.3521%	$6,910.90	$6,789.60	
2Y	30 November, 2017	31 May, 2018	1.2522	0.9752520	18x24	1.4792%	$7,478.25	$7,293.18	
								$25,129.07	Total PV
						Suggested fixed rate			
			Cost of Borrowing %			1.2506%			
Fixed Rate Table	Start date	End date	Zero Coupon Rates %	Discount Factors		IRS's fixed rate	Cashflows	Discounted Cashflows or Present Values	
6M	27 May, 2016	28 November, 2016	0.9752	0.9950276		1.2506%	$6,426.78	$6,394.82	
1Y	28 November, 2016	30 May, 2017	1.0911	0.9891480		1.2506%	$6,357.30	$6,288.31	
1Y6M	30 May, 2017	30 November, 2017	1.1788	0.9824492		1.2506%	$6,392.04	$6,279.85	
2Y	30 November, 2017	31 May, 2018	1.2522	0.9752520		1.2506%	$6,322.56	$6,166.09	
								$25,129.07	Total PV
								0	Difference*10000

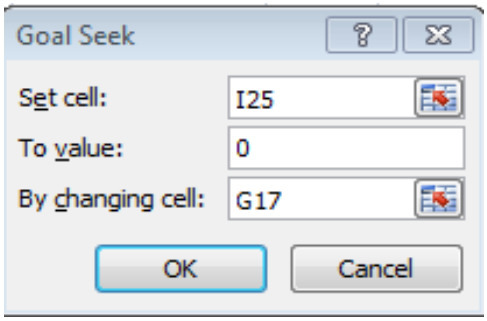
Using the above spreadsheet, the PV could be calculated by the following steps

Press **Alt+T+G** in Excel

Fill in the box as follows (Set cell **I25** to value **0**, by changing cell **G17**)

For your reference, the two boxes have been highlighted in blue.

The PV is the box highlighted in red

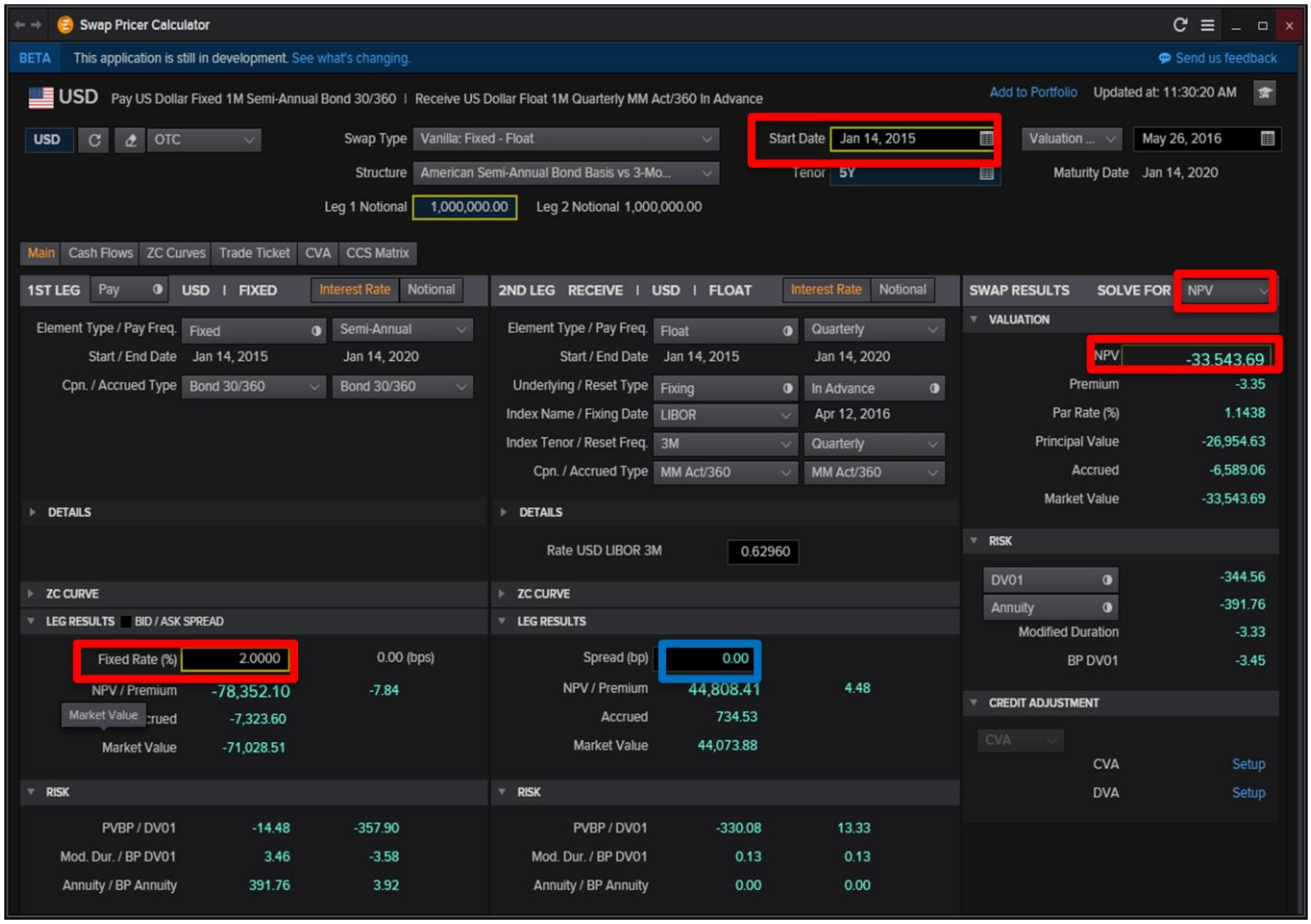


How to price an existing IRS deal

If either party wishes to cancel the IRS deal halfway through the tenor, the SWPR calculator could be used to calculate the penalty that should be paid (by other sign as shown by the sign of the NPV)

Here is an example that continues from the previous screenshot.

Assuming that the start date of the contract was on January 14, 2015, where a 2% fixed rate was agreed upon. Today is 26/5/2016.



Hence, in the SWPR, we would change the following information.

1. Change the start date to the date of the contract (here 14/1/2015)

2. Change the fixed rate agreed upon (i.e. 2%)

3. Change the "Solve for" to **NPV**

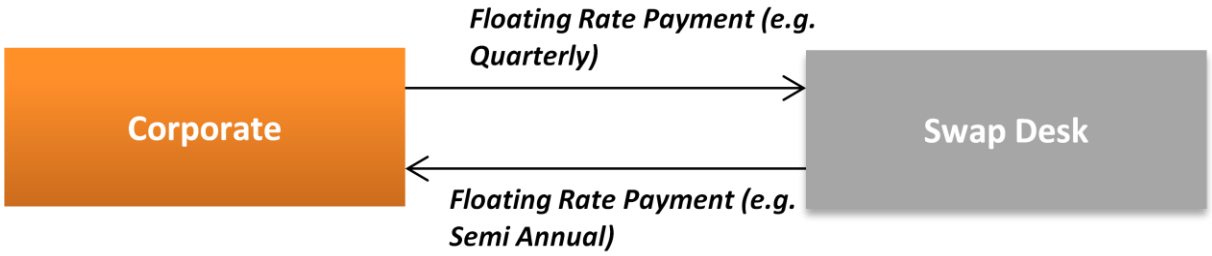
4. Find the NPV of the IRS. Here the value is negative and hence the payer of the fixed rate would have to pay for the cancellation of the IRS deal.

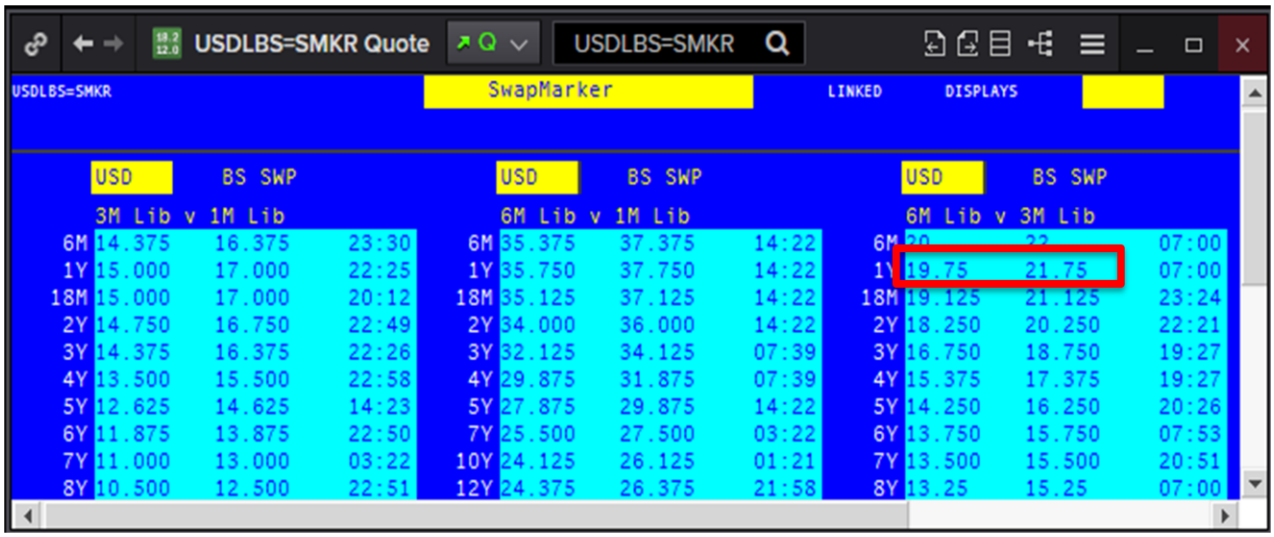
Similarly a spread could be added if needed.

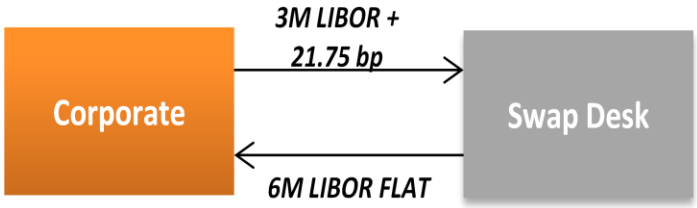
7. Basis Swap

What is a Basis Swap?

A basis swap involves the exchange of two floating payments (as opposed to the IRS where a fixed rate is exchanged for a floating rate)







How to do it on Eikon?

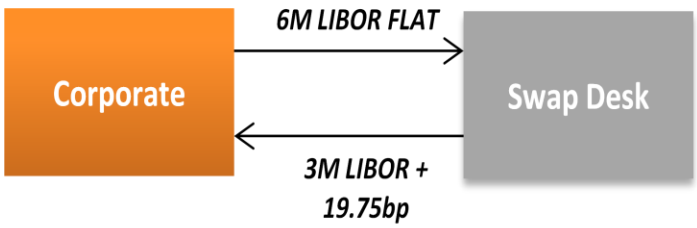
E.g. if there is a switch of a quarterly floating rate and a semi-annual floating rate payment for a tenor of one year, we would do the following.

Press **F4** and type **<USDLBS=SMKR>**

Use the figures for a 1 year tenor

When the Swap Desk receives the payment for a quarterly payment, they would charge the ask bid points (bp)

When the Swap Desk pays the quarterly payment, they will pay the bid bp which is lower.



CVA and DVA Adjustments

Previously, we have assumed that IRS calculated all had implied ratings of AA. Since IRS are priced off Libor curves and Libor is the average of banks offered rates, Libor has an implied credit rating equal tot eh average of the banks in the Libor pool. (i.e. AA rating)

However, when one party has a better rating than Libor, a reduction spread will be applied on the swap rate and conversely, when one party has a worse rating than the other, an additional spread will be applied.

Credit Valuation Adjustment:

CVA represents the additional cost to account for the possibility of the counterparty's default on the IRS deal. (If the counterparty has a rating lower than AA)

Debt Valuation Adjustment:

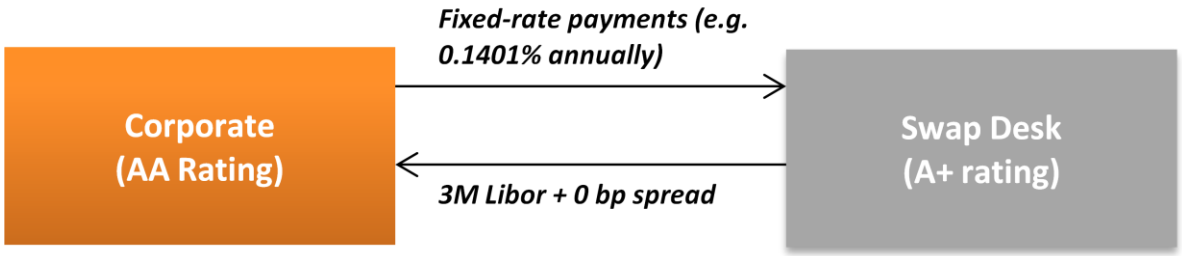
DVA represents the additional cost to account for one's own default (Market Maker)

Bilateral:

This is the combination of the above 2.

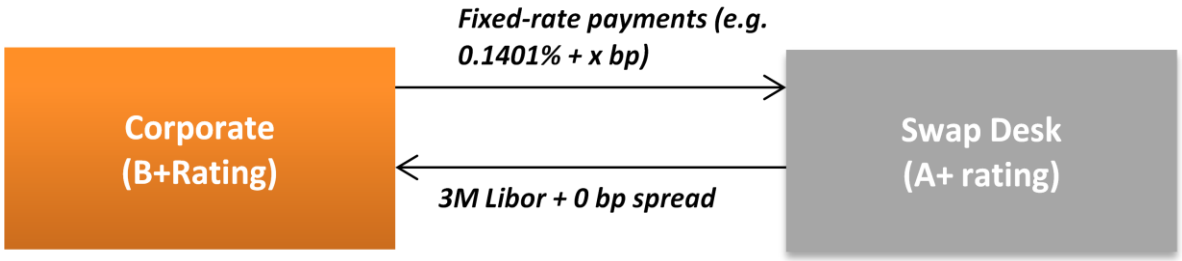
An example is given as follows,

The counterparty of the same credit rating as the Swap Desk and hence there is no need for CV



Now, the corporate has a lower credit rating than the swap desk. The bp is calculated to be 0.1401%, however the swap desk wants to be insured against their default hence they asked for a credit charge from the Credit desk who tells them the CVA should be x bp. Hence, the swap desk adds x bp.

The counterparty has the lower credit rating hence the cost is to be borne by the lower rating party



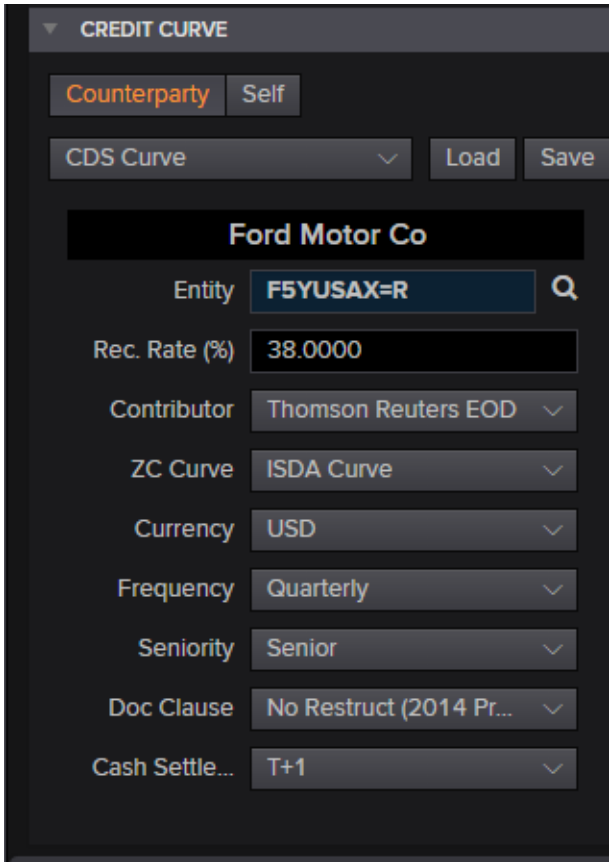
Note: if the swap desk has a lower rating or both have ratings below AA , a DVA or bilateral is added to the corresponding party

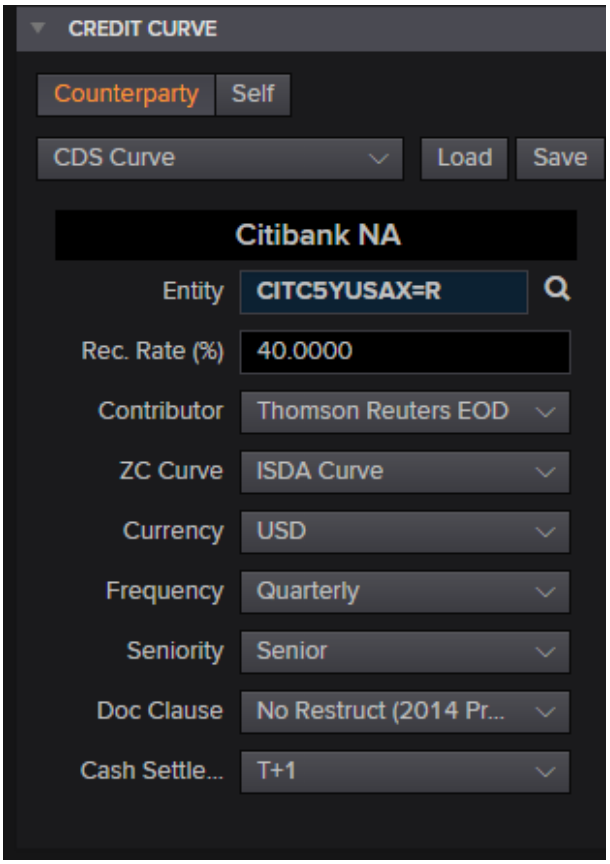
How to input these into Eikon's SWPR?

In order to perform this on the new SWPR, the **"collateralized"** should be changed to **"OTC"**

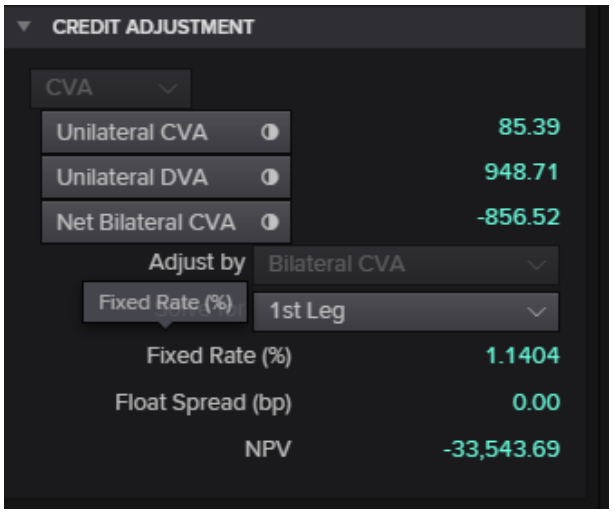
Under the **CVA** tab, different settings could be chosen as shown below.

E.g. Here we used CDS Curves for Ford Motor (CVA- Counterparty) and Citibank (DVA- Self)





Hence, the swap results would reflect a CVA and DVA as shown and a new Fixed rate could be displayed as well.



8. Cross Currency Swaps (CRS)

What is a Cross Currency Swap?

A cross currency swap (CCS or CRS) (e.g. EURJPY) has the features of an Interest Rate Swap while giving each counterparty access to a different foreign currency.

For example,

Currency principal amounts may be exchanged at the outset and re-exchanged at maturity at the same exchange rates.

As a result,

Exchange risk on the principal amounts is eliminated, while retaining

- The Interest Rate Exposure and
- Currency Exposure on the Interest flows and
- on the Net Result of any transaction that has been closed out prior to Maturity.

Therefore, these cash flows that occur as part of a CCS could be in the following manner.

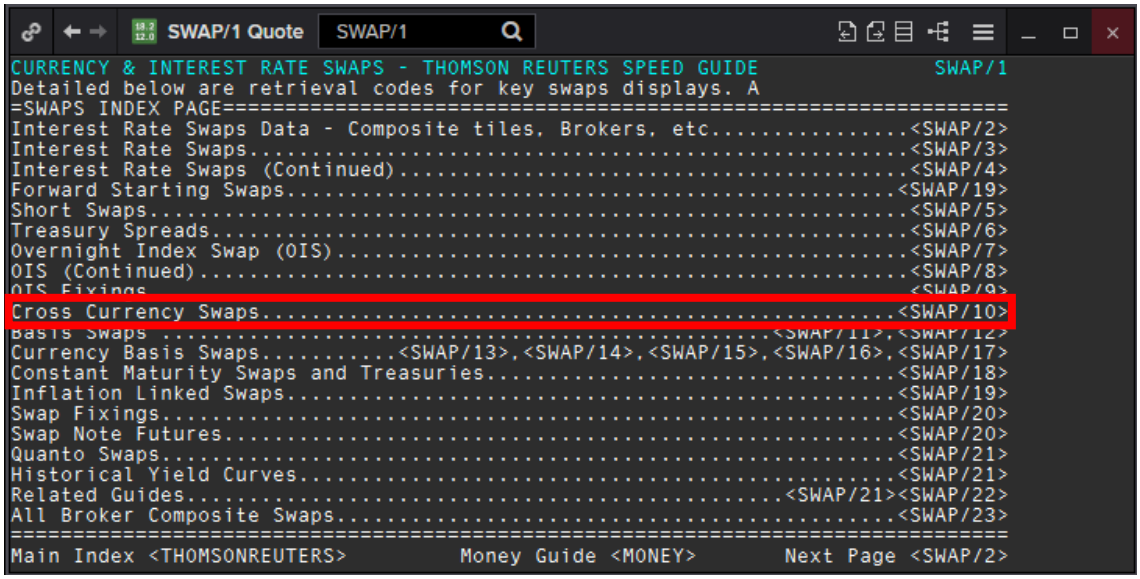
- Fixed against floating
- Floating against floating
- Fixed against Fixed
- Linked with the Returns of an Asset (e.g. an equity indices or Islamic Swap of a bank)

Hence, a currency basis swap is likely to exist between the two floating rates of the different currencies.

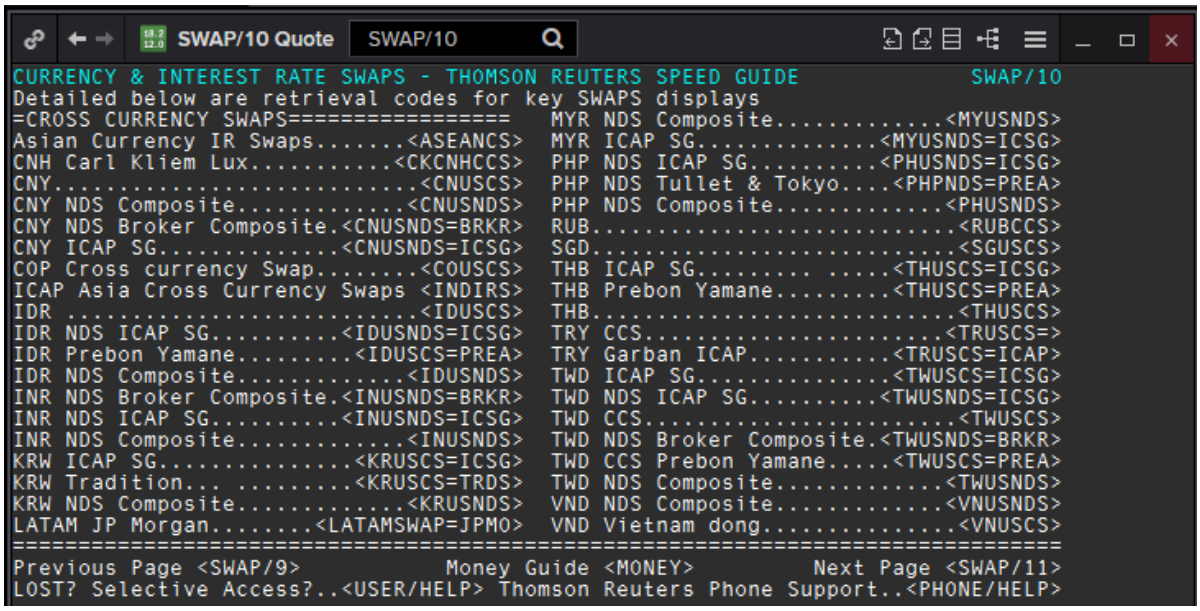
How to get Indicative Data on Cross Currency Swap?

In order to get indicative data on CRS or CCS rates, one should refer to the Speed Guide page on Eikon for swaps.

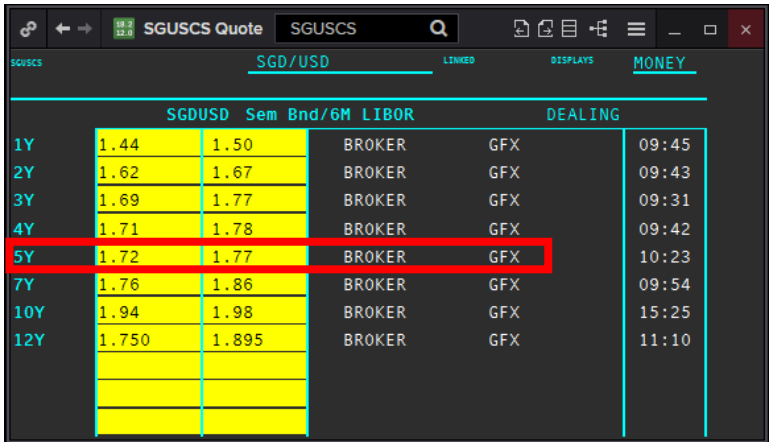
Press F4, and type **<SWAP/1>.**



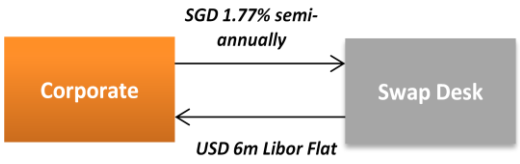
Select **<SWAP/10>** to arrive at the cross currency swaps page.

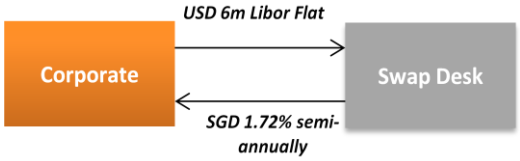


For example, if you are looking for a USDSGD Cross Currency Swap, you would select **<SGUSCS>.**



Therefore, the quote page would be as such. However, how does one make sense of these numbers?





In the case of a 5Y Cross Currency Swap,

The Corporate will pay SGD fixed (1.77%) semi-annually in the first example and receive USD floating.

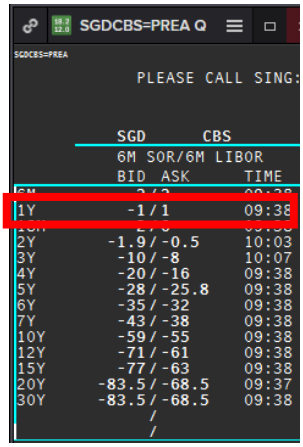
On the other hand the example below it shows the scenario when the corporate instead receives a fixed SGD payment.

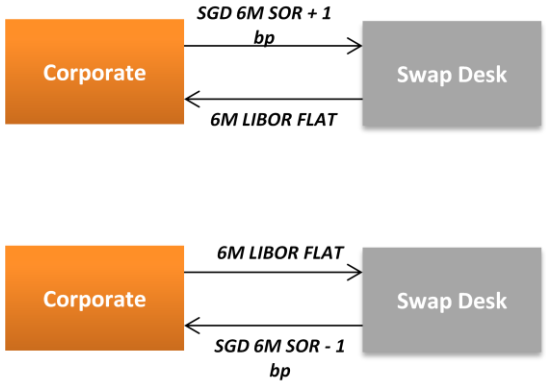
Thus, the bid figure is used when the corporate receives SGD fixed and the ask when they pay SGD fixed.

How to get Indicative Data on Currency Basis Swap?

On the Swap Speed Guide page **<SWAP/1>**, select the Currency Basis Swap option **<SWAP/13> to <SWAP/17>**, navigating through the pages with the Next Page function.

For example, for a 1 year USDSGD Currency Basis Swap





This implies that the corporate pays SGD 6M Swap Offer Rates with an additional 1bp as a premium in the first scenario and in the second, the corporate receives SGD 6M Swap Offer Rates less 1bp.

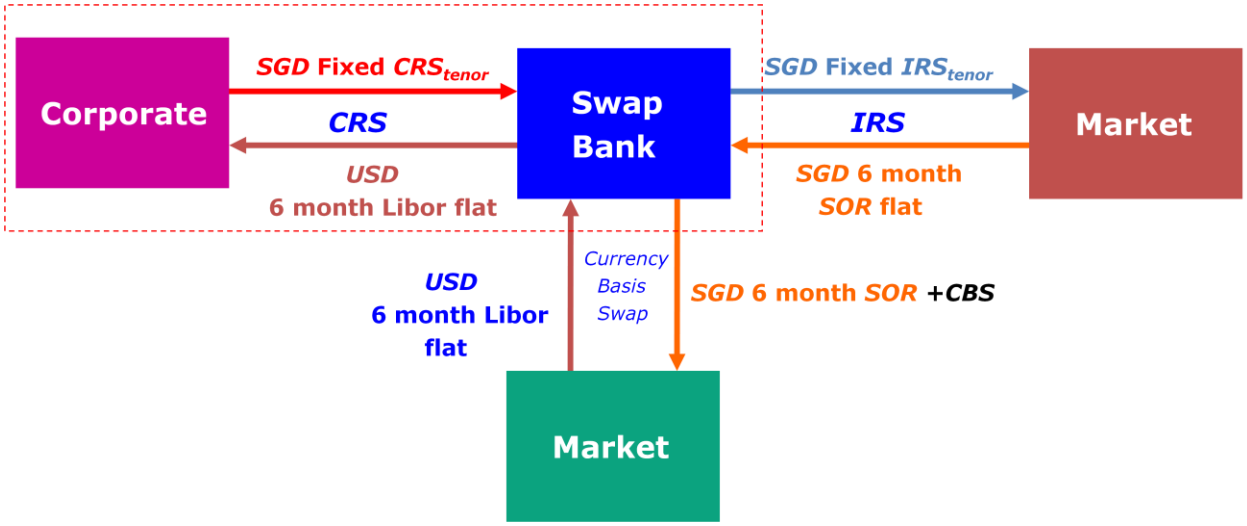
Both parties receive floating rate payments.

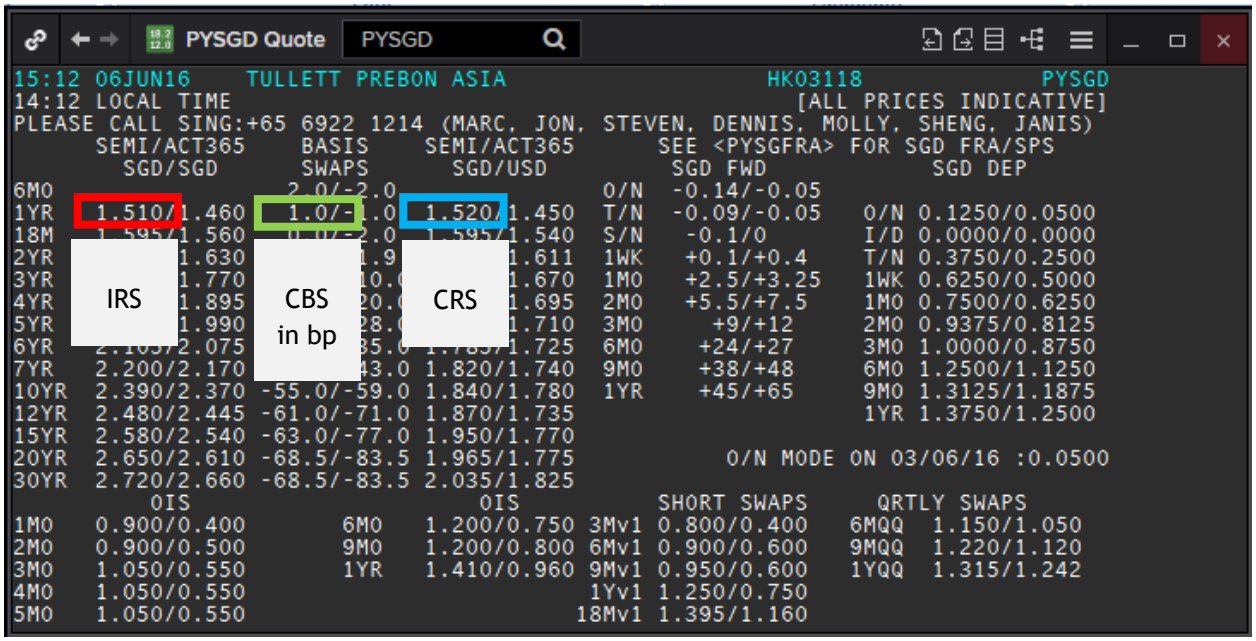
Relationship between Currency Basis Swaps, CRS and IRS

If we assume the same notional amount for all structures, in yield's perspective:

Fixed Rate of CRS_{tenor} = Fixed rate of IRS_{tenor} + CBS_{tenor}

Here, CBS refers to the Currency Basis Spread





Hence, for a 1year tenor,

Fixed Rate of CRS = Fixed Rate of IRS + CBS

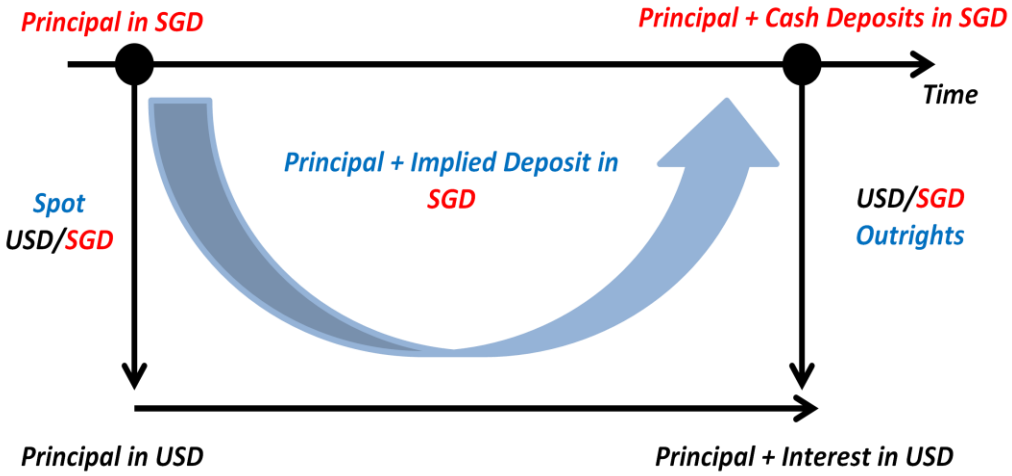
1.520% = 1.510% + (1.0/100)%

Note that prices in this page are presented from the broker's swap desk perspective, with the ask being presented first, followed by the bid price.

Refer to the Case Studies for the different Target Markets for Cross Currency Swaps

9. Implied Deposits

What is an implied deposit?



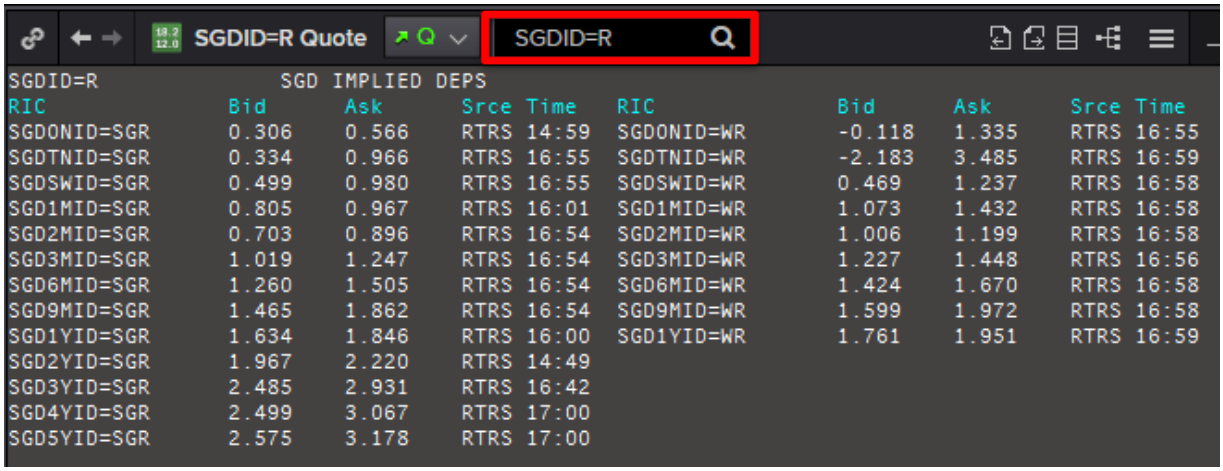
An implied deposit occurs during a FX swap used to hedge foreign exchange risk. For example, if a financial institution lends in *SGD* alone, there may be a credit risk due to default.

Hence, by going through FX swaps, there will be less credit risk due to currency exchange and there may be better liquidity due to the market depth and a greater amount of market participants.

How to get indicative data on Implied Deposit Rates?

1. Press **F4** and type "**MONEY**"
2. Under Interest Rate Related, select Deposits by pressing on the words **<DEPO/1>**
3. Select the Implied Deposits tab through **<DEPO/4>**
4. For more selections, press the **<DEPO/5>** to be directed to the next page.

A page like follows will appear with the implied deposit rates.



SGDID=R SGD IMPLIED DEPS

RIC	Bid	Ask	Srce	Time	RIC	Bid	Ask	Srce	Time
SGDONID=SGR	0.306	0.566	RTRS	14:59	SGDONID=WR	-0.118	1.335	RTRS	16:55
SGDTNID=SGR	0.334	0.966	RTRS	16:55	SGDTNID=WR	-2.183	3.485	RTRS	16:59
SGDSWID=SGR	0.499	0.980	RTRS	16:55	SGDSWID=WR	0.469	1.237	RTRS	16:58
SGD1MID=SGR	0.805	0.967	RTRS	16:01	SGD1MID=WR	1.073	1.432	RTRS	16:58
SGD2MID=SGR	0.703	0.896	RTRS	16:54	SGD2MID=WR	1.006	1.199	RTRS	16:58
SGD3MID=SGR	1.019	1.247	RTRS	16:54	SGD3MID=WR	1.227	1.448	RTRS	16:56
SGD6MID=SGR	1.260	1.505	RTRS	16:54	SGD6MID=WR	1.424	1.670	RTRS	16:58
SGD9MID=SGR	1.465	1.862	RTRS	16:54	SGD9MID=WR	1.599	1.972	RTRS	16:58
SGD1YID=SGR	1.634	1.846	RTRS	16:00	SGD1YID=WR	1.761	1.951	RTRS	16:59
SGD2YID=SGR	1.967	2.220	RTRS	14:49					
SGD3YID=SGR	2.485	2.931	RTRS	16:42					
SGD4YID=SGR	2.499	3.067	RTRS	17:00					
SGD5YID=SGR	2.575	3.178	RTRS	17:00					

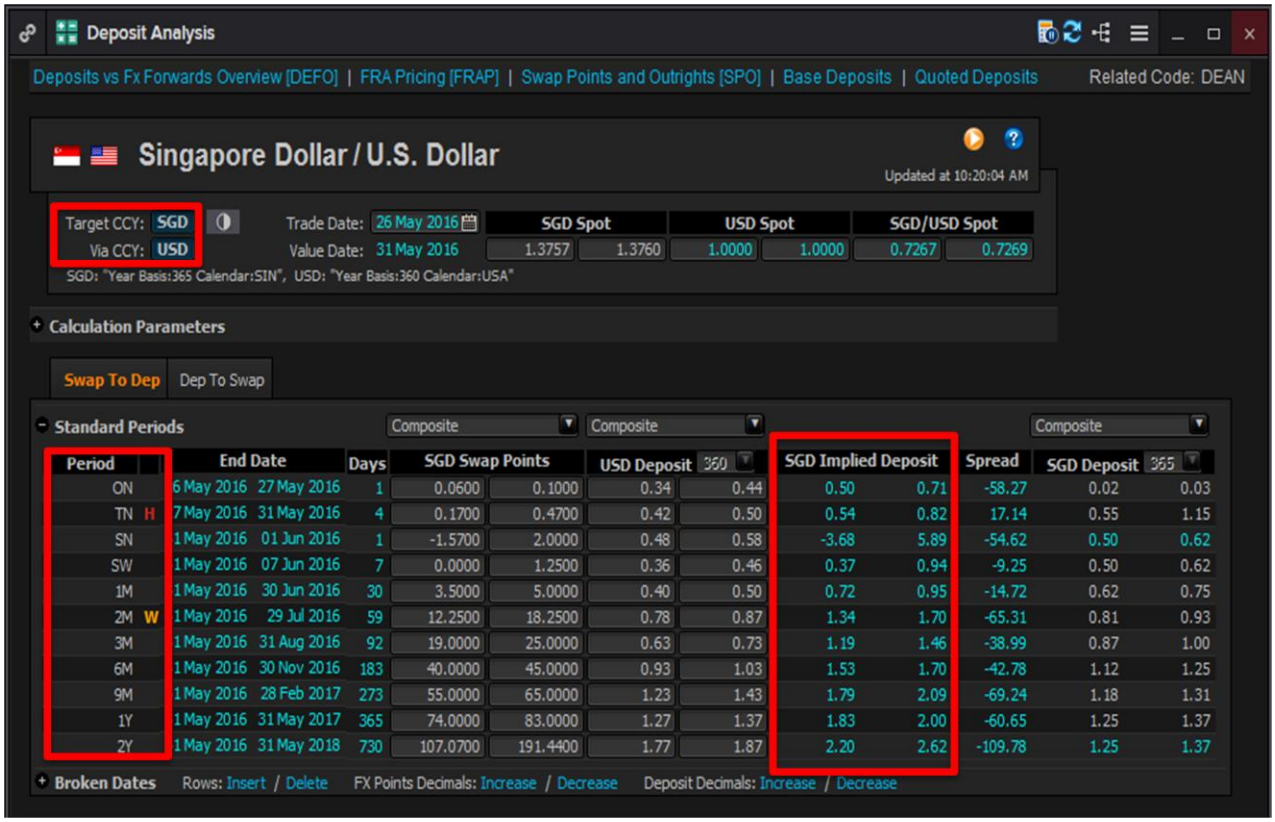
How to find information about the Deposit Analysis Calculator<DEAN>?

We will now discuss the possibilities through the use of the Deposit Analysis (DEAN) on Eikon.

First, Eikon uses certain terminologies.

Target Currency: This refers to the currency that is required at the end (the horizontal line of the previous diagram)

Via Currency: The currency that the implied deposit is carried through.



Who would need to use the DEAN?

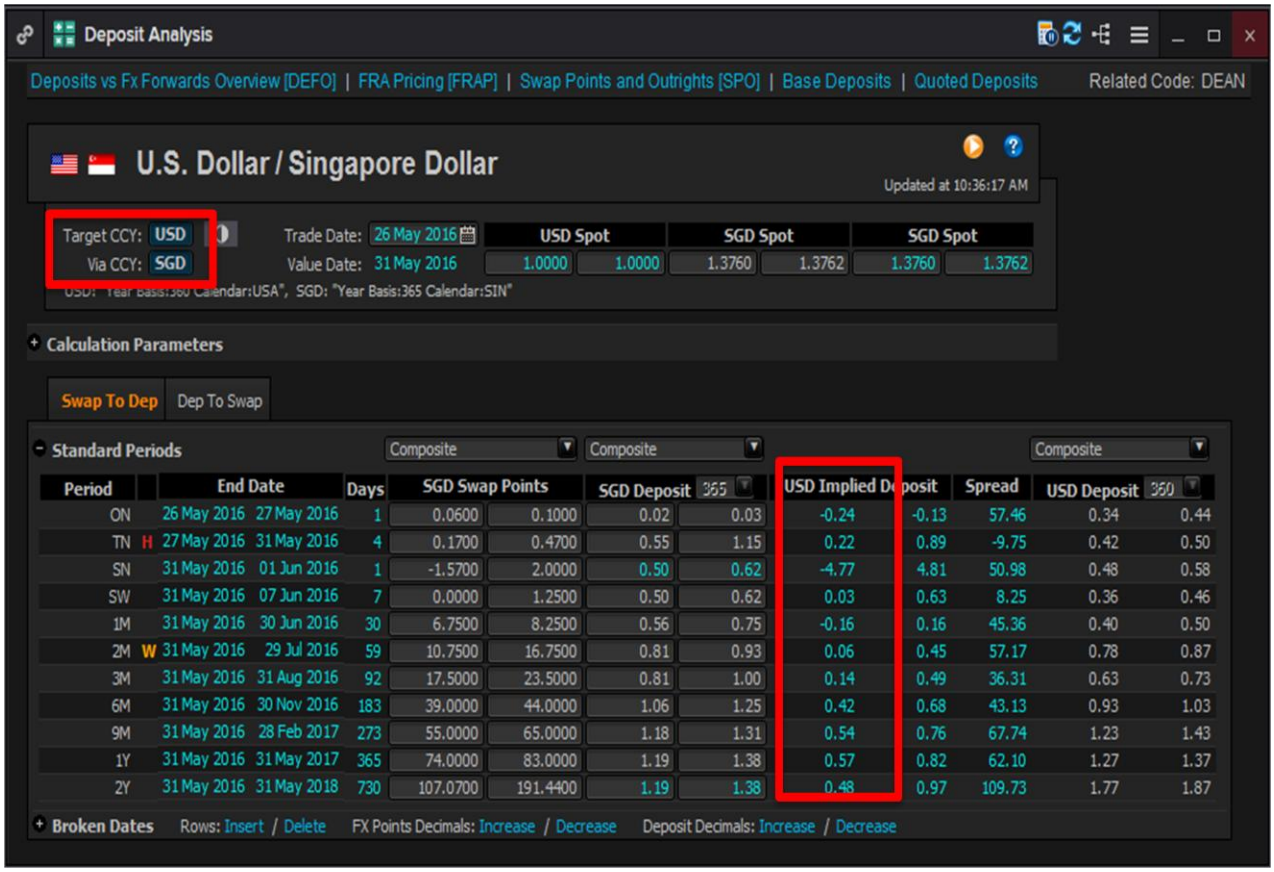
This model is used by Market Takers who will arbitrage based on these values if they observe a huge difference (spread) between cash deposits and implied deposits.

A case study will be provided subsequently, comparing SGD Deposits to USD, GBP and EUR Implied Deposits.

There are 4 possible cases of implied deposits, which can be summarized in the table below.

Currency Format	Market Taker (Lend at Bid)	Market Taker (Borrow at ask)
Implied Base Currency Deposits	Case A	Case B
Implied Counter Currency Deposits	Case C	Case D

Case A: The Market Taker lends USD (Bid Rate) via SGD

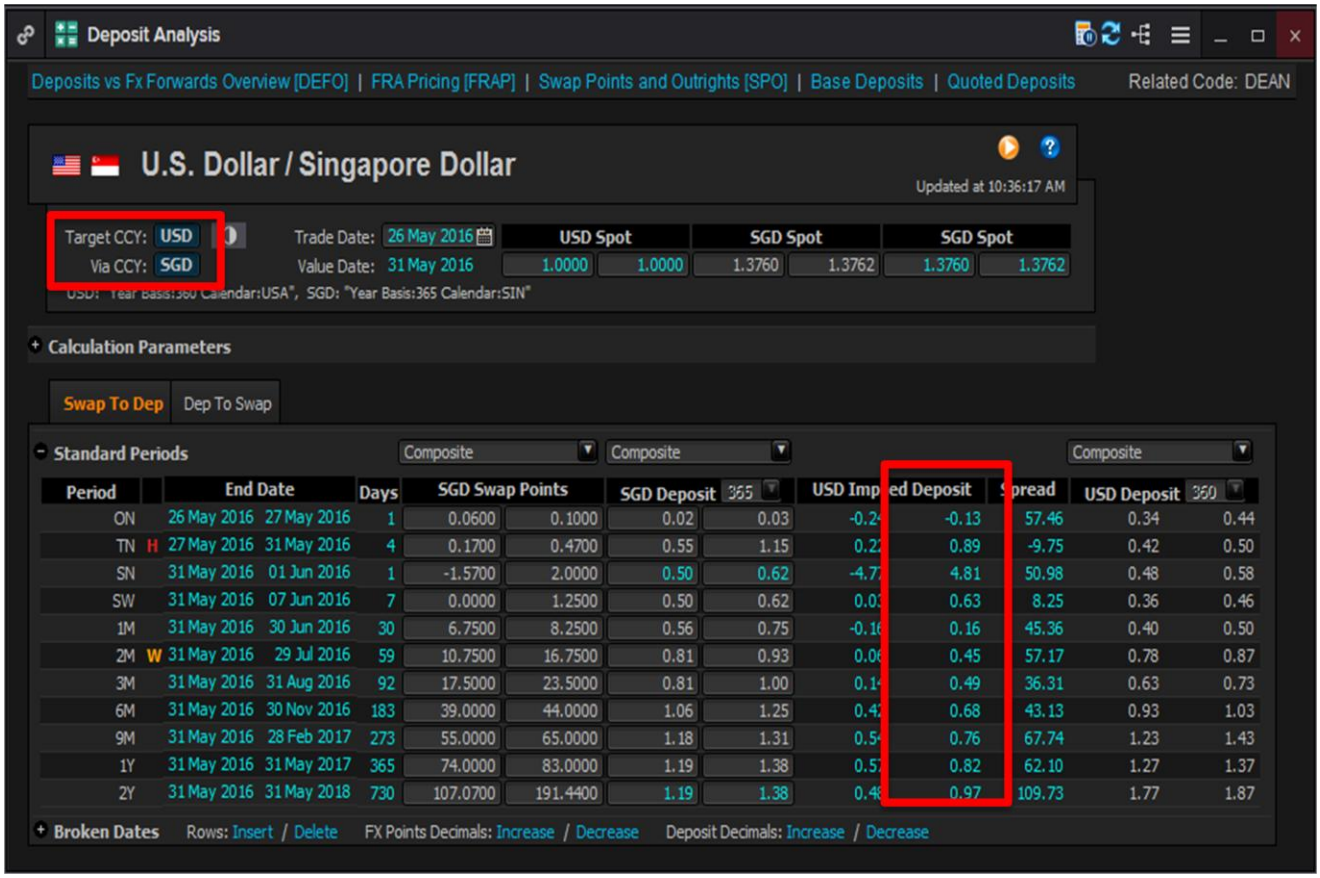


The process would constitute 2 different steps.

1. Lend **SGD** (Bid Rate) through the Money Market at the Singapore deposit rate
2. Buysell **SGD** and Sellbuy **USD** through FX Swaps (Ask Rate)

This equates to lending **USD** (bid rate) at the Implied Deposit Rate.

Case B: The Market Taker borrows USD (Ask Rate) via SGD

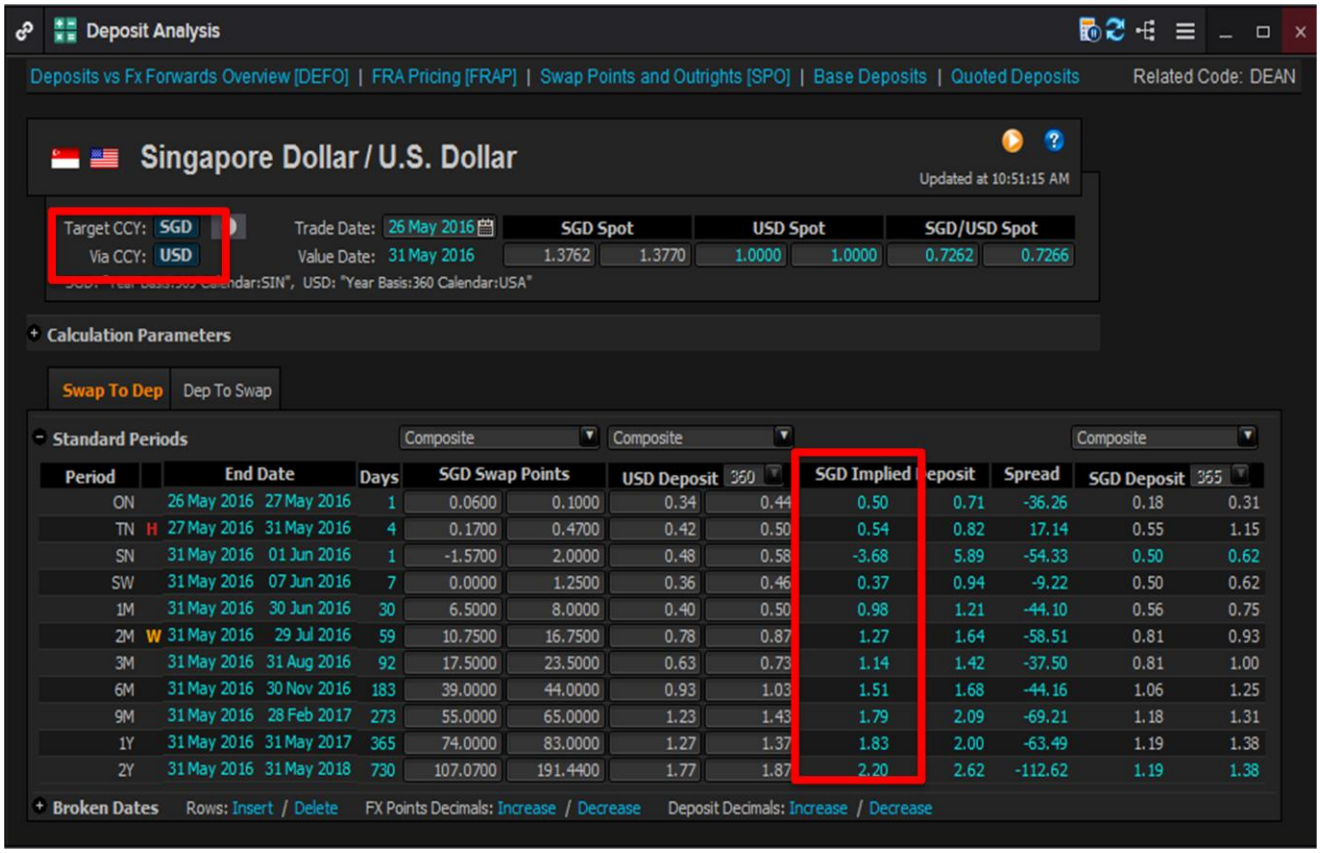


The process would constitute 2 different steps.

1. Borrow **SGD** (Ask Rate) through the Money Market at the Singapore deposit rate
2. Sellbuy **SGD** and Buysell **USD** through FX Swaps (Bid Rate)

This equates to borrowing **USD** (ask rate) at the Implied Deposit Rate.

Case C: The Market Taker lends SGD (Bid Rate) via USD

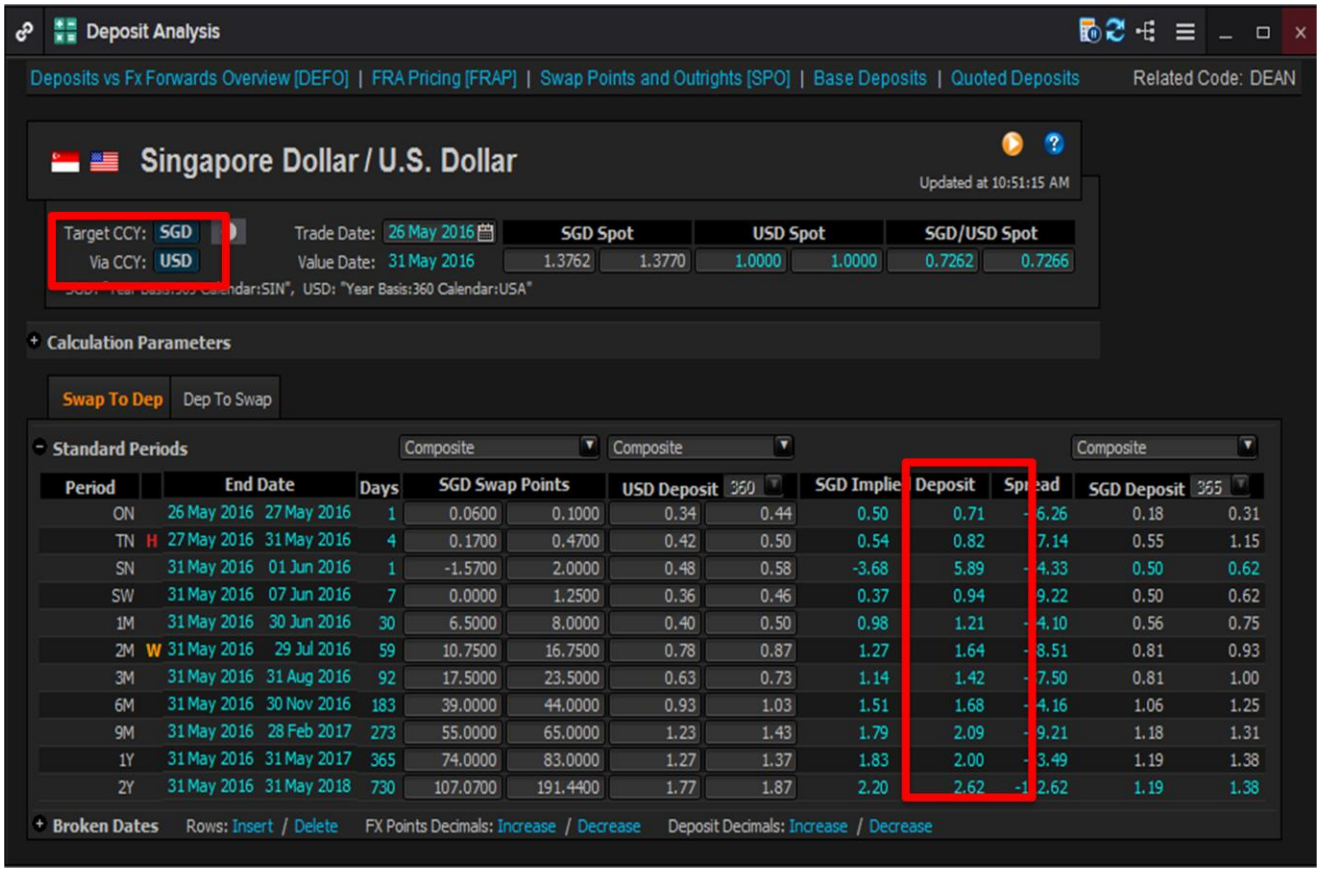


The process would constitute 2 different steps.

1. Lend **USD** (Bid Rate) through the Money Market at the US deposit rate
2. Buysell **USD** and Sellbuy **SGD** through FX Swaps (Bid Rate)

This equates to lending **SGD** (bid rate) at the Implied Deposit Rate.

Case D: The Market Taker borrows SGD (Ask Rate) via USD



The process would constitute 2 different steps.

1. Borrow **USD** (Ask rate) through the Money Market at the US deposit rate
2. Sellbuy **USD** and Buysell **SGD** (Bid) through FX Swaps (Ask Rate)

This equates to borrowing **SGD** (ask rate) at the Implied Deposit Rate.

Part 7: Case Studies for FX and Money Market

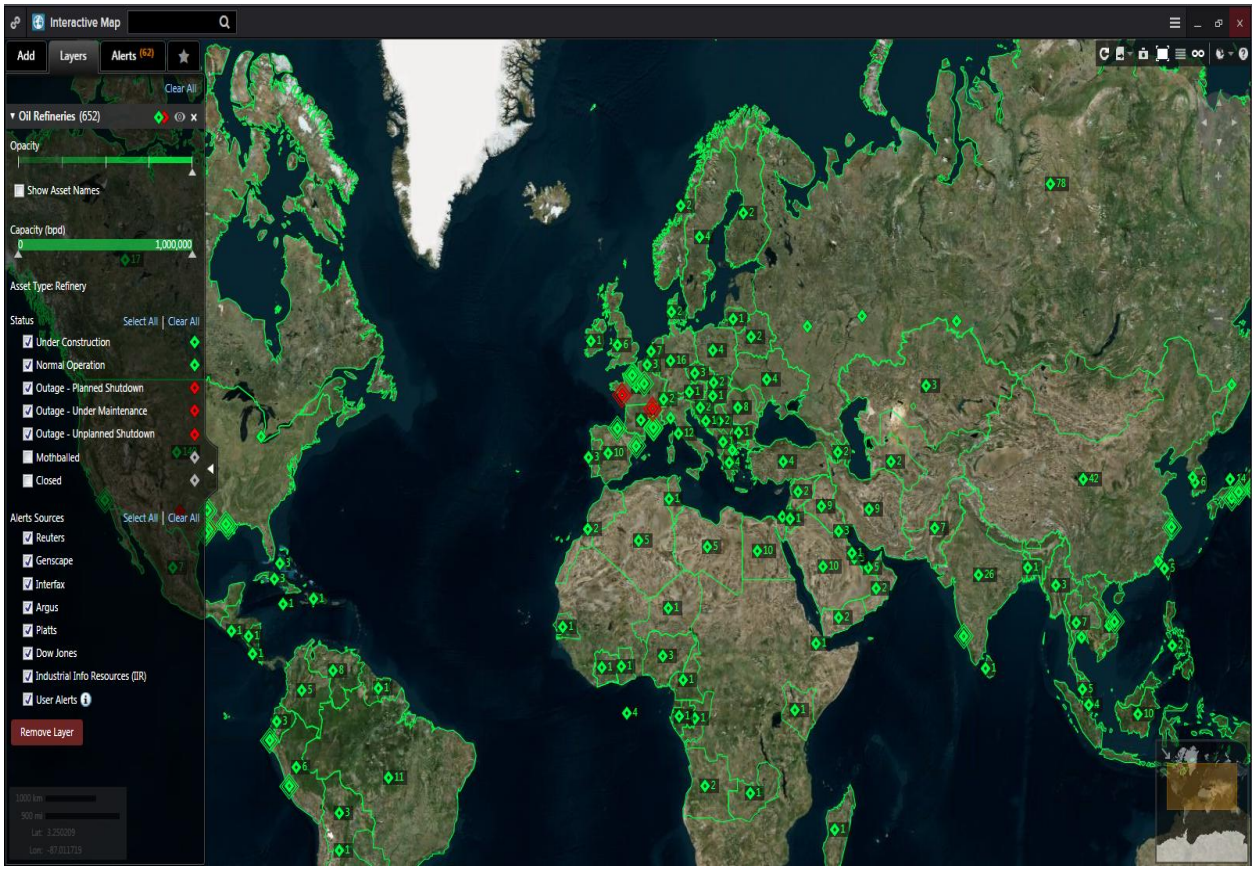
1. Case Study: Spot and Forwards FX

In order to better understand the concept behind spot and forward FX outrights, below is an example to help you better visualize the concept.

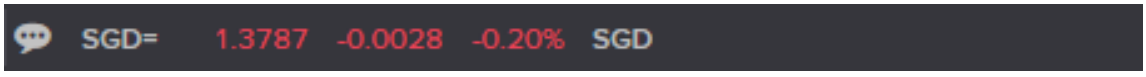
Post-Spot Value Date Forwards

Mark is the **corporate treasurer** of a maintenance service company in Singapore. Among his clients are *US* and *Japan* refineries.

To start of his day, Mark opened his **INTERACTIVE MAP** Application (in order to have an overview on refineries in operation and under maintenance in order to forecast potential businesses in the near future.



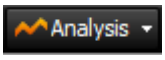
However, suddenly a set of numbers at the top of his screen attracted his attention



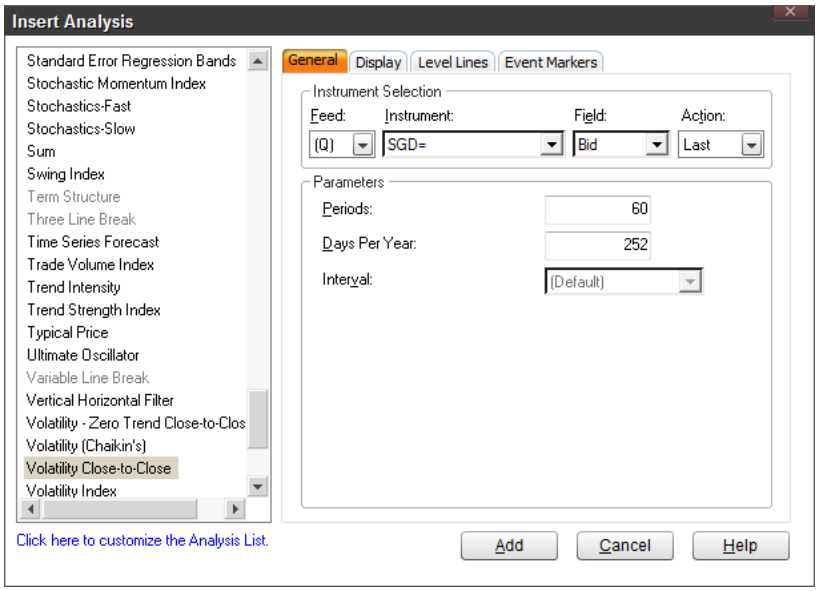
In order to gain a better overview, he pulled out the spot *USDSGD* Chart (in SGD per USD) and analyzed the 60 day historical volatility.

Press **F4** to get the quote page and type **<SGD=>**. In order to pull out the corresponding chart for the quote, press **F10.**

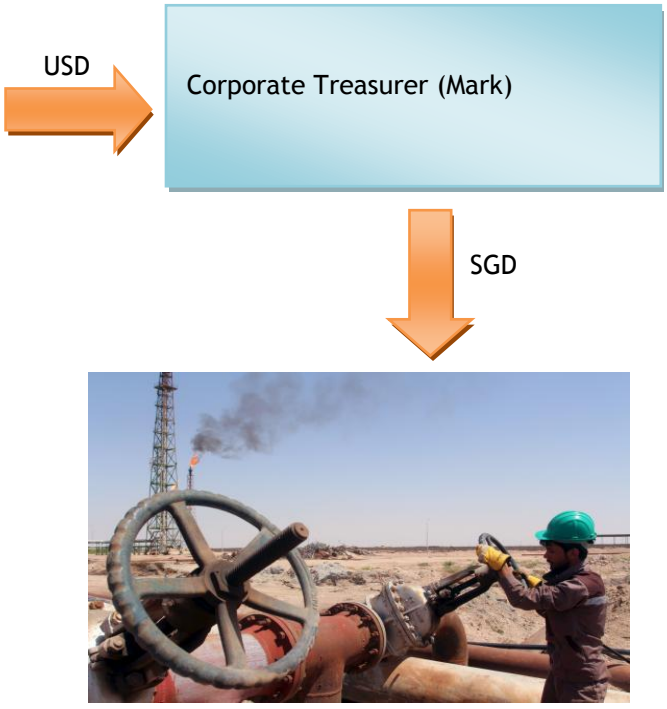
Here is how to plot the Volatility Chart for any given currency pair.

1. Press the  button at the top left corner of the page

2. Click on **<Volatility Close-to-Close>** and set it as follows, changing the instrument as needed. The period, field (bid,ask,mid) can all be specified.



In 3 months time, Mark will be receiving *USD denominated* payments from clients but would require to pay his staffs in *SGD denominated* payments.



Thus, in 3 months time, if the *USD* weakens against *SGD*, he will face a problem paying his Singaporean staff.

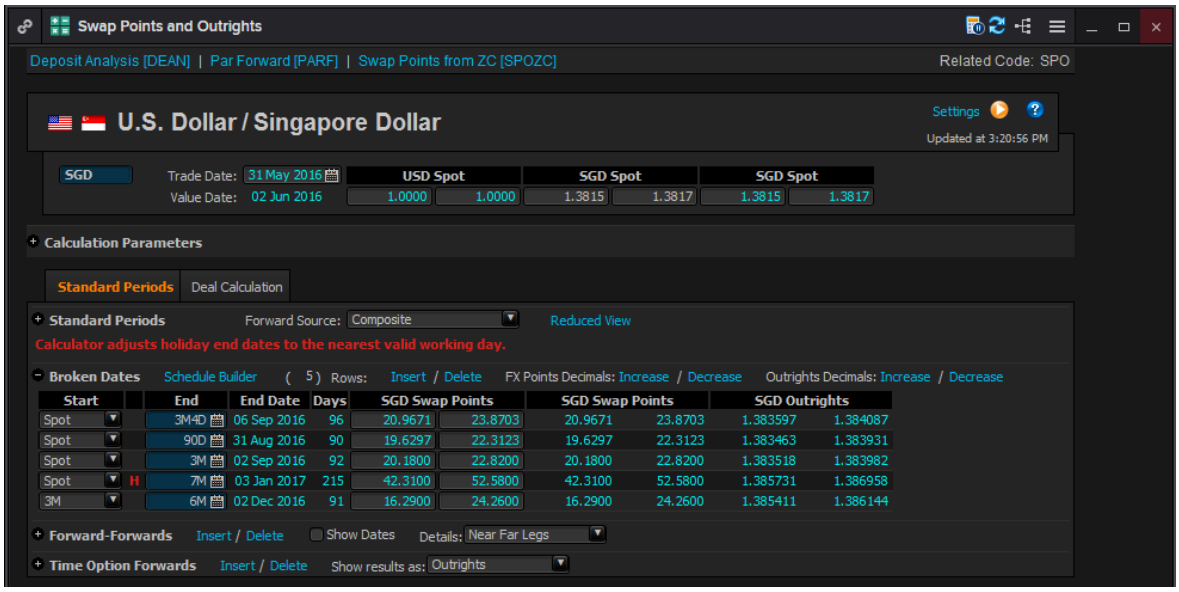
Therefore, he decided to remove or reduce this FX exposure and thus called the corporate sales desk of a bank for advice.

The senior corporate sales manager, Jackson immediately had a solution for Mark's problem:

Sell a 3 month USDSGD outright to lock in the 3 months USDSGD Price.

However, Mark had another problem. The date was not exactly 3 months, but was instead **3 months and 4 days.**

Unaffected, Jackson pulled up the SWAP POINTS AND OUTRIGHTS application.

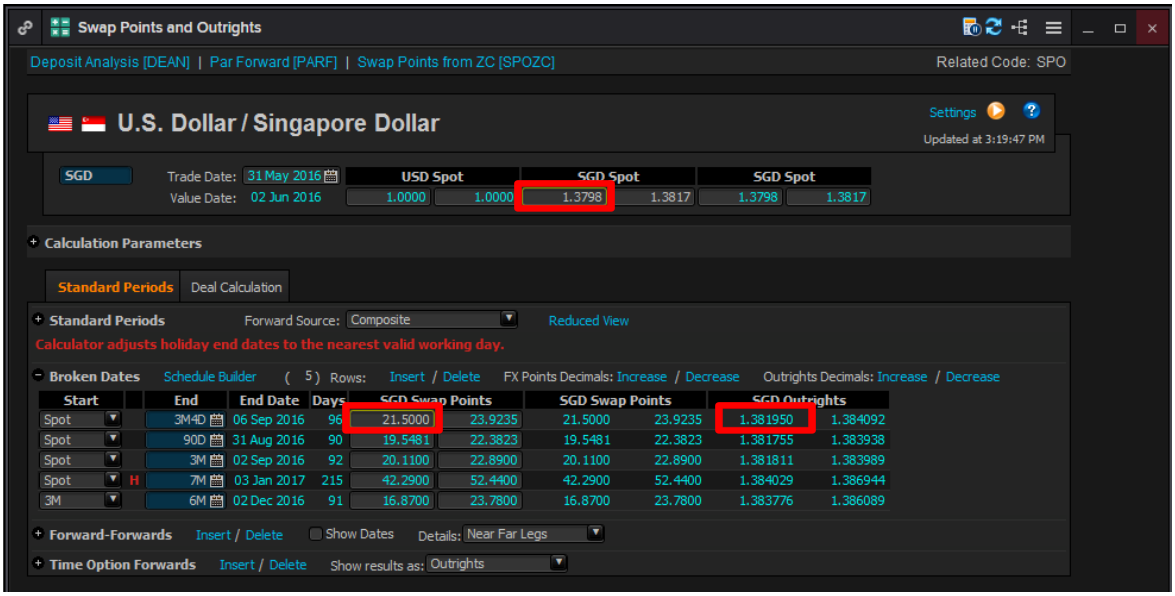


Since it was not a standard tenor, Jackson typed <3M4D> at the **Broken Dates** Section. As the date was a holiday, highlighted in red, the calculator moved to the next working day automatically.

As a *USDSGD outright* comprises of both a spot *USDSGD* and swap points, Jackson needed 2 sets of tradable data: Tradable spot *USDSGD* and tradable *swap points*.

Since the spot prices is always more volatile than the relevant swap points, Jackson first quoted the swap points before quoting the spot price, calling the relevant money market traders for the swap points and the spot FX traders for the spot price, keying both of them into the calculator.

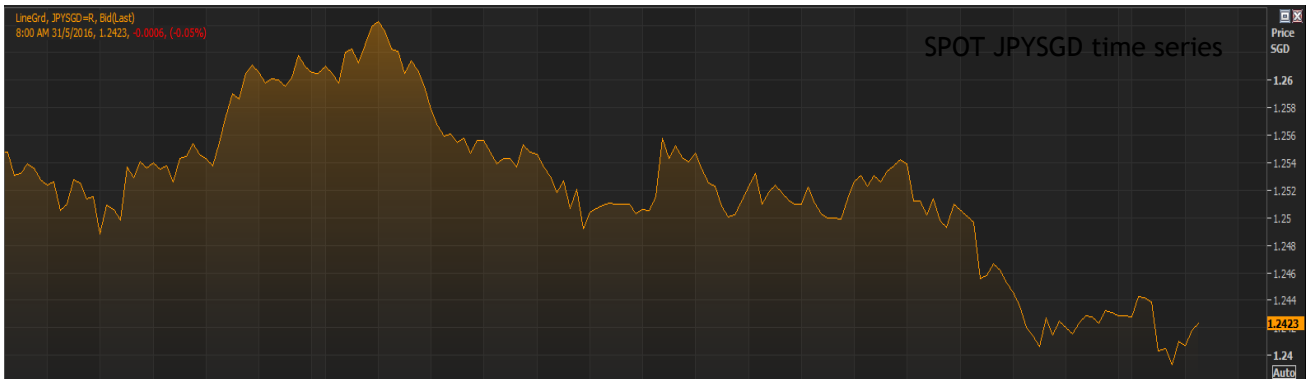
E.g. Swap Points = 22 and Spot Price = 1.3501



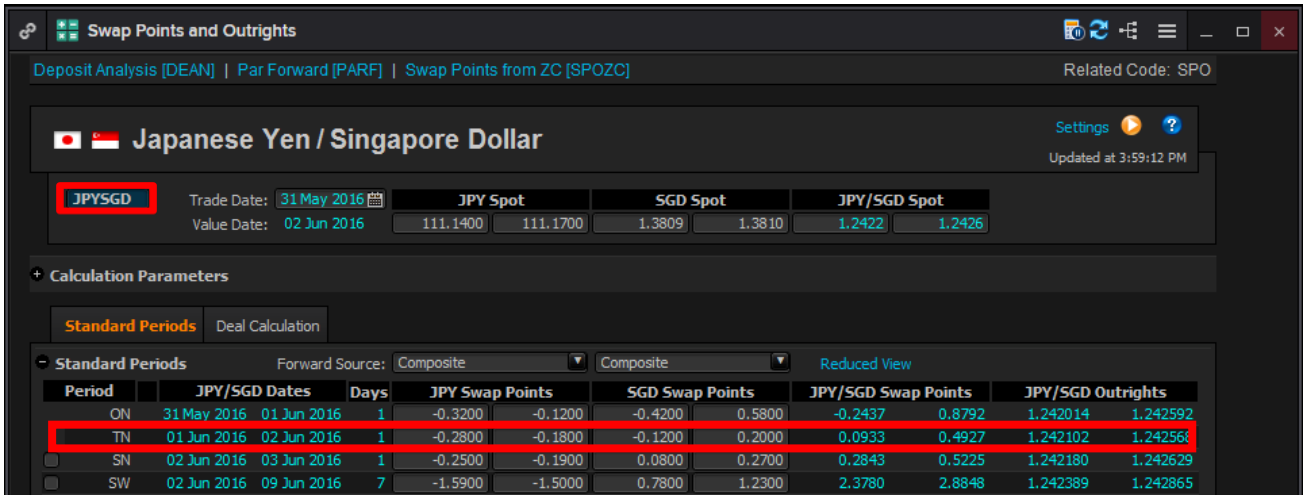
Hence, the USDSGD outright price calculated is 1.381950. Hence, Mark's future FX Exposure was successfully hedged.

Pre-Spot Value Date Forwards

However, Mark expressed further concerns. He has a ***JPYSGD* exposure** due tomorrow. However, news of an earthquake hitting Japan and the news of BOJ adopting more negative rates made him nervous.



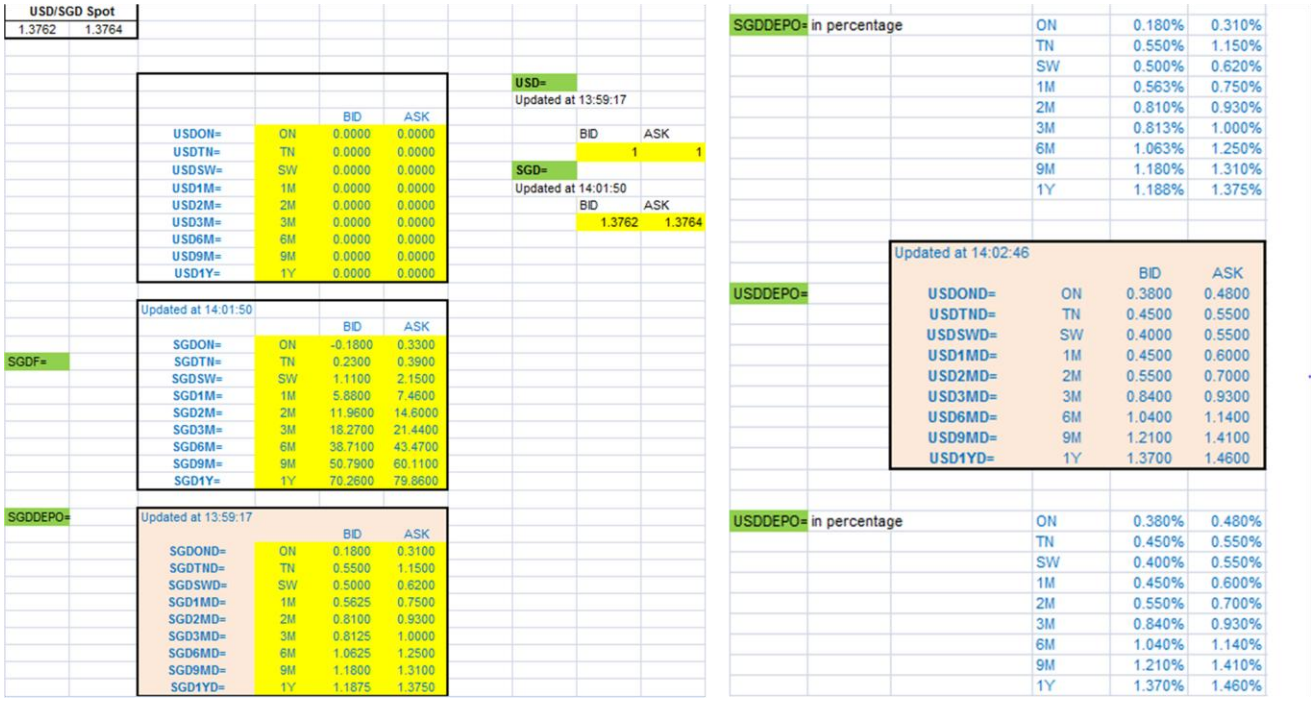
Jackson then opened the JPYSGD Swap Points and Outrights, presenting the TomNext (TN) figures to Mark.



Hence, Mark would be able to hedge his JPYSGD exposure tomorrow by using a TomNext forward contract today, at a JPYSGD Outright price of 1.242102 assuming the spot and swap points were that quoted by the respective traders.

2. Case Study: Implied Deposits

Here, we will present an example of how to utilize implied deposits for profiting purposes. First, the different implied deposits for **USD, EUR and GBP** can be calculated and subsequently, compared against the domestic deposit rate for **SGD.**



USD/SGD Spot	
1.3762	1.3764

		BID	ASK
USDON=	ON	0.0000	0.0000
USDTN=	TN	0.0000	0.0000
USDSW=	SW	0.0000	0.0000
USD1M=	1M	0.0000	0.0000
USD2M=	2M	0.0000	0.0000
USD3M=	3M	0.0000	0.0000
USD6M=	6M	0.0000	0.0000
USD9M=	9M	0.0000	0.0000
USD1Y=	1Y	0.0000	0.0000

USD=
Updated at 13:59:17

BID	ASK
1	1

SGD=
Updated at 14:01:50

BID	ASK
1.3762	1.3764

SGDF=

Updated at 14:01:50

		BID	ASK
SGDON=	ON	-0.1800	0.3300
SGDTN=	TN	0.2300	0.3900
SGDSW=	SW	1.1100	2.1500
SGD1M=	1M	5.8800	7.4600
SGD2M=	2M	11.9600	14.6000
SGD3M=	3M	18.2700	21.4400
SGD6M=	6M	38.7100	43.4700
SGD9M=	9M	50.7900	60.1100
SGD1Y=	1Y	70.2600	79.8600

SGDDEPO=

Updated at 13:59:17

		BID	ASK
SGDOND=	ON	0.1800	0.3100
SGDTND=	TN	0.5500	1.1500
SGDSWD=	SW	0.5000	0.6200
SGD1MD=	1M	0.5625	0.7500
SGD2MD=	2M	0.8100	0.9300
SGD3MD=	3M	0.8125	1.0000
SGD6MD=	6M	1.0625	1.2500
SGD9MD=	9M	1.1800	1.3100
SGD1YD=	1Y	1.1875	1.3750

SGDDEPO= in percentage

ON	0.180%	0.310%
TN	0.550%	1.150%
SW	0.500%	0.620%
1M	0.563%	0.750%
2M	0.810%	0.930%
3M	0.813%	1.000%
6M	1.063%	1.250%
9M	1.180%	1.310%
1Y	1.188%	1.375%

USDDEPO=

Updated at 14:02:46

		BID	ASK
USDOND=	ON	0.3800	0.4800
USDTND=	TN	0.4500	0.5500
USDSWD=	SW	0.4000	0.5500
USD1MD=	1M	0.4500	0.6000
USD2MD=	2M	0.5500	0.7000
USD3MD=	3M	0.8400	0.9300
USD6MD=	6M	1.0400	1.1400
USD9MD=	9M	1.2100	1.4100
USD1YD=	1Y	1.3700	1.4600

USDDEPO= in percentage

ON	0.380%	0.480%
TN	0.450%	0.550%
SW	0.400%	0.550%
1M	0.450%	0.600%
2M	0.550%	0.700%
3M	0.840%	0.930%
6M	1.040%	1.140%
9M	1.210%	1.410%
1Y	1.370%	1.460%

Target Ccy	SGD	Contributor
Via Ccy	USD	

Trade Date	26-May-16
Value Date	31-May-16

USD/USD Spot	
1	1

USD/SGD Spot	
1.3768	1.3769

USD/SGD Spot	
1.3768	1.3769

Std Periods

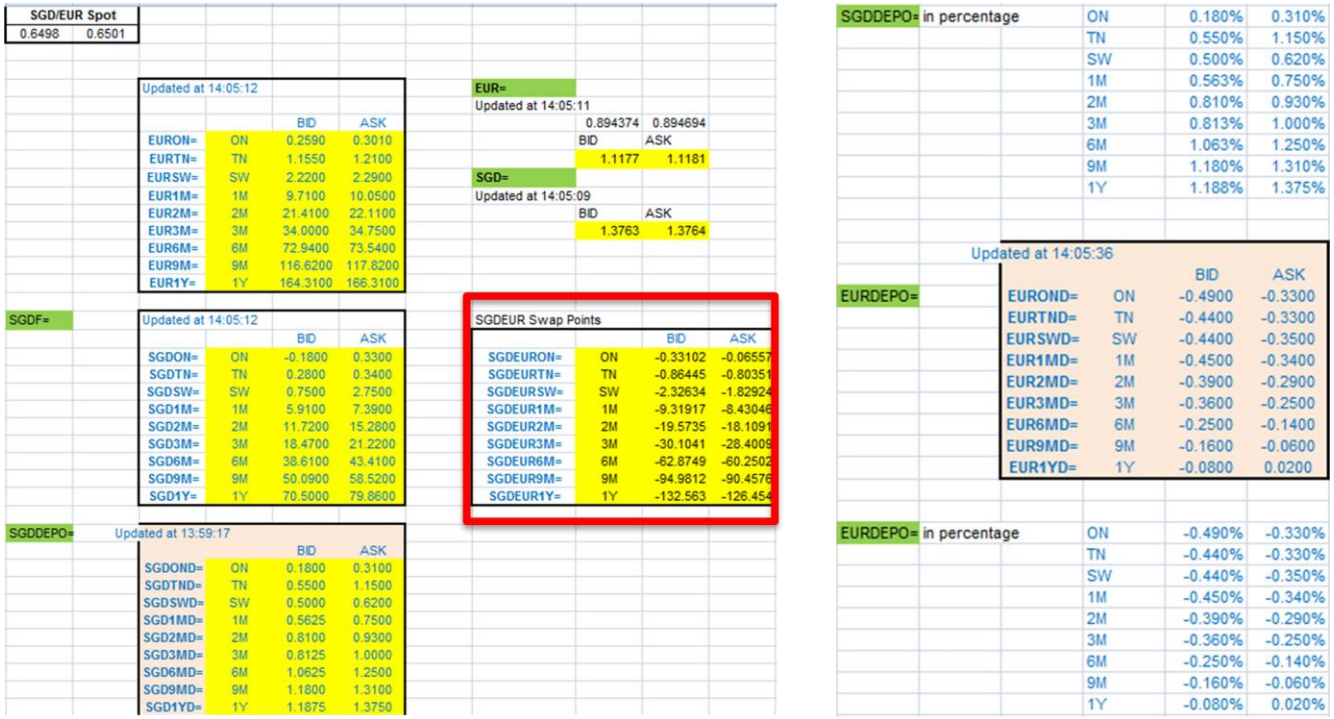
				Cont:		Cont:					
Period	Start Date	End Date	Days	USD Deposit		SGD Cash Deposit		SGD Swap Points		Implied Deposit	
ON	26-May-16	27-May-16	1	0.34%	0.44%	0.18%	0.31%	-0.0600	0.0100	0.19%	0.47%
TN	27-May-16	31-May-16	4	0.42%	0.50%	0.55%	1.15%	0.2400	0.3600	0.58%	0.75%
SW	31-May-16	7-Jun-16	7	0.36%	0.46%	0.50%	0.62%	0.0000	1.2500	0.37%	0.94%
1M	31-May-16	30-Jun-16	30	0.40%	0.50%	0.56%	0.75%	3.1500	3.8500	0.68%	0.85%
2M	31-May-16	29-Jul-16	59	0.78%	0.87%	0.81%	0.93%	10.7500	16.7500	1.27%	1.64%
3M	31-May-16	31-Aug-16	92	0.63%	0.73%	0.81%	1.00%	17.5000	23.5000	1.14%	1.42%
6M	31-May-16	30-Nov-16	183	0.93%	1.03%	1.06%	1.25%	39.0000	44.0000	1.51%	1.69%
9M	31-May-16	28-Feb-17	273	1.23%	1.43%	1.18%	1.31%	50.0000	65.0000	1.74%	2.09%
1Y	31-May-16	31-May-17	365	1.27%	1.37%	1.19%	1.38%	70.0000	80.0000	1.80%	1.98%

To de-activate: Proceed to the fx section and CTRL+ENTER is to disable the Array Function (or the Grouping)

To activate: Highlight the blue boxes and F2 to reactivate the Array Function and CTRL+SHIFT+ENTER to publish all the Arrary Answers (or the Group Answers)

SGDEUR

For Cross Currencies (not against USD), the Cross Swap Points must be calculated and this is shown it the box highlighted in red below.



SGD/EUR Spot	
0.6498	0.6501

Updated at 14:05:12

		BID	ASK
EURON=	ON	0.2590	0.3010
EURTN=	TN	1.1550	1.2100
EURSW=	SW	2.2200	2.2900
EUR1M=	1M	9.7100	10.0500
EUR2M=	2M	21.4100	22.1100
EUR3M=	3M	34.0000	34.7500
EUR6M=	6M	72.9400	73.5400
EUR9M=	9M	116.6200	117.8200
EUR1Y=	1Y	164.3100	166.3100

EUR=
Updated at 14:05:11

0.894374	0.894694
BID	ASK
1.1177	1.1181

SGD=
Updated at 14:05:09

BID	ASK
1.3763	1.3764

SGDF=
Updated at 14:05:12

		BID	ASK
SGDON=	ON	-0.1800	0.3300
SGDTN=	TN	0.2800	0.3400
SGDSW=	SW	0.7500	2.7500
SGD1M=	1M	5.9100	7.3900
SGD2M=	2M	11.7200	15.2800
SGD3M=	3M	18.4700	21.2200
SGD6M=	6M	38.6100	43.4100
SGD9M=	9M	50.0900	58.5200
SGD1Y=	1Y	70.5000	79.8600

SGDEUR Swap Points

		BID	ASK
SGDEURON=	ON	-0.33102	-0.06557
SGDEURTN=	TN	-0.86445	-0.80351
SGDEURSW=	SW	-2.32634	-1.82924
SGDEUR1M=	1M	-9.31917	-8.43046
SGDEUR2M=	2M	-19.5735	-18.1091
SGDEUR3M=	3M	-30.1041	-28.4009
SGDEUR6M=	6M	-62.8749	-60.2502
SGDEUR9M=	9M	-94.9812	-90.4576
SGDEUR1Y=	1Y	-132.563	-126.454

SGDDEPO=
Updated at 13:59:17

		BID	ASK
SGDOND=	ON	0.1800	0.3100
SGDTND=	TN	0.5500	1.1500
SGDSWD=	SW	0.5000	0.6200
SGD1MD=	1M	0.5625	0.7500
SGD2MD=	2M	0.8100	0.9300
SGD3MD=	3M	0.8125	1.0000
SGD6MD=	6M	1.0625	1.2500
SGD9MD=	9M	1.1800	1.3100
SGD1YD=	1Y	1.1875	1.3750

SGDDEPO=	in percentage		
	ON	0.180%	0.310%
	TN	0.550%	1.150%
	SW	0.500%	0.620%
	1M	0.563%	0.750%
	2M	0.810%	0.930%
	3M	0.813%	1.000%
	6M	1.063%	1.250%
	9M	1.180%	1.310%
	1Y	1.188%	1.375%

Updated at 14:05:36

EURDEPO=

		BID	ASK
EUROND=	ON	-0.4900	-0.3300
EURTND=	TN	-0.4400	-0.3300
EURSWD=	SW	-0.4400	-0.3500
EUR1MD=	1M	-0.4500	-0.3400
EUR2MD=	2M	-0.3900	-0.2900
EUR3MD=	3M	-0.3600	-0.2500
EUR6MD=	6M	-0.2500	-0.1400
EUR9MD=	9M	-0.1600	-0.0600
EUR1YD=	1Y	-0.0800	0.0200

EURDEPO=	in percentage		
	ON	-0.490%	-0.330%
	TN	-0.440%	-0.330%
	SW	-0.440%	-0.350%
	1M	-0.450%	-0.340%
	2M	-0.390%	-0.290%
	3M	-0.360%	-0.250%
	6M	-0.250%	-0.140%
	9M	-0.160%	-0.060%
	1Y	-0.080%	0.020%

Target Ccy	SGD	Contributor
Via Ccy	EUR	

Trade Date	26-May-16
Value Date	31-May-16

EUR/USD Spot	
1.118	1.1181

USD/SGD Spot	
1.3767	1.3769

SGD/EUR Spot	
0.6496	0.6497

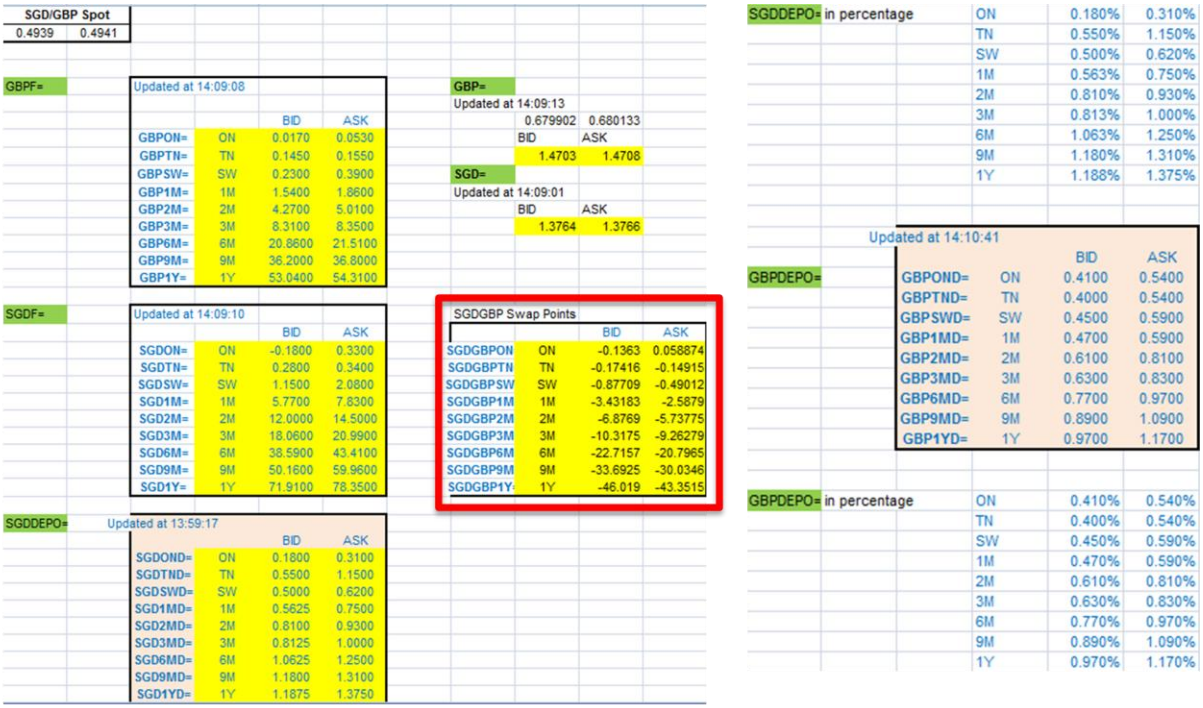
Std Periods

				Cont:		Cont:					
Period	Start Date	End Date	Days	EUR Deposit		SGD Cash Deposit		SGD/EUR Swap Point		Implied Deposit	
ON	26-May-16	27-May-16	1	-0.49%	-0.33%	0.18%	0.31%	-0.2332	-0.1772	0.50%	0.98%
TN	27-May-16	31-May-16	4	-0.49%	-0.33%	0.55%	1.15%	-0.8615	-0.7872	0.61%	0.88%
SW	31-May-16	7-Jun-16	7	-0.45%	-0.28%	0.50%	0.62%	-1.9661	-1.2782	0.57%	1.29%
1M	31-May-16	30-Jun-16	30	-0.43%	-0.34%	0.56%	0.75%	-7.7054	-7.2911	0.93%	1.10%
2M	31-May-16	29-Jul-16	59	-0.36%	-0.25%	0.81%	0.93%	-20.8406	-17.4895	1.31%	1.74%
3M	31-May-16	31-Aug-16	92	-0.30%	-0.14%	0.81%	1.00%	-31.1872	-27.9508	1.41%	1.77%
6M	31-May-16	30-Nov-16	183	-0.23%	-0.07%	1.06%	1.25%	-62.9652	-60.3133	1.64%	1.88%
9M	31-May-16	28-Feb-17	273	-0.15%	0.01%	1.18%	1.31%	-97.8841	-90.1196	1.73%	2.06%
1Y	31-May-16	31-May-17	365	-0.08%	0.07%	1.19%	1.38%	-131.8482	-126.1696	1.90%	2.14%

To de-activate: Proceed to the fx sectio
CTRL+ENTER is to disable the Array Function (or the Grouping)

To activate: Highlight the blue boxes and
F2 to reactivate the Array Function and
CTRL+SHIFT+ENTER to publish all the Arrary Answers (or the Group Answers)

SGDGBP



SGD/GBP Spot	
0.4939	0.4941

GBPF= Updated at 14:09:08

		BID	ASK
GBPON=	ON	0.0170	0.0530
GBPTN=	TN	0.1450	0.1550
GBPSW=	SW	0.2300	0.3900
GBP1M=	1M	1.5400	1.8600
GBP2M=	2M	4.2700	5.0100
GBP3M=	3M	8.3100	8.3500
GBP6M=	6M	20.8600	21.5100
GBP9M=	9M	36.2000	36.8000
GBP1Y=	1Y	53.0400	54.3100

GBP= Updated at 14:09:13

0.679902	0.680133
BID	ASK
1.4703	1.4708

SGD= Updated at 14:09:01

BID	ASK
1.3764	1.3766

SGDF= Updated at 14:09:10

		BID	ASK
SGDON=	ON	-0.1800	0.3300
SGDTN=	TN	0.2800	0.3400
SGDSW=	SW	1.1500	2.0800
SGD1M=	1M	5.7700	7.8300
SGD2M=	2M	12.0000	14.5000
SGD3M=	3M	18.0600	20.9900
SGD6M=	6M	38.5900	43.4100
SGD9M=	9M	50.1600	59.9600
SGD1Y=	1Y	71.9100	78.3500

SGDGBP Swap Points

		BID	ASK
SGDGBPON	ON	-0.1363	0.058874
SGDGBPTN	TN	-0.17416	-0.14915
SGDGBPSW	SW	-0.87709	-0.49012
SGDGBP1M	1M	-3.43183	-2.5879
SGDGBP2M	2M	-6.8769	-5.73775
SGDGBP3M	3M	-10.3175	-9.26279
SGDGBP6M	6M	-22.7157	-20.7965
SGDGBP9M	9M	-33.6925	-30.0346
SGDGBP1Y	1Y	-46.019	-43.3515

SGDDEPO= Updated at 13:59:17

		BID	ASK
SGDOND=	ON	0.1800	0.3100
SGDTND=	TN	0.5500	1.1500
SGDSWD=	SW	0.5000	0.6200
SGD1MD=	1M	0.5625	0.7500
SGD2MD=	2M	0.8100	0.9300
SGD3MD=	3M	0.8125	1.0000
SGD6MD=	6M	1.0625	1.2500
SGD9MD=	9M	1.1800	1.3100
SGD1YD=	1Y	1.1875	1.3750

SGDDEPO= in percentage

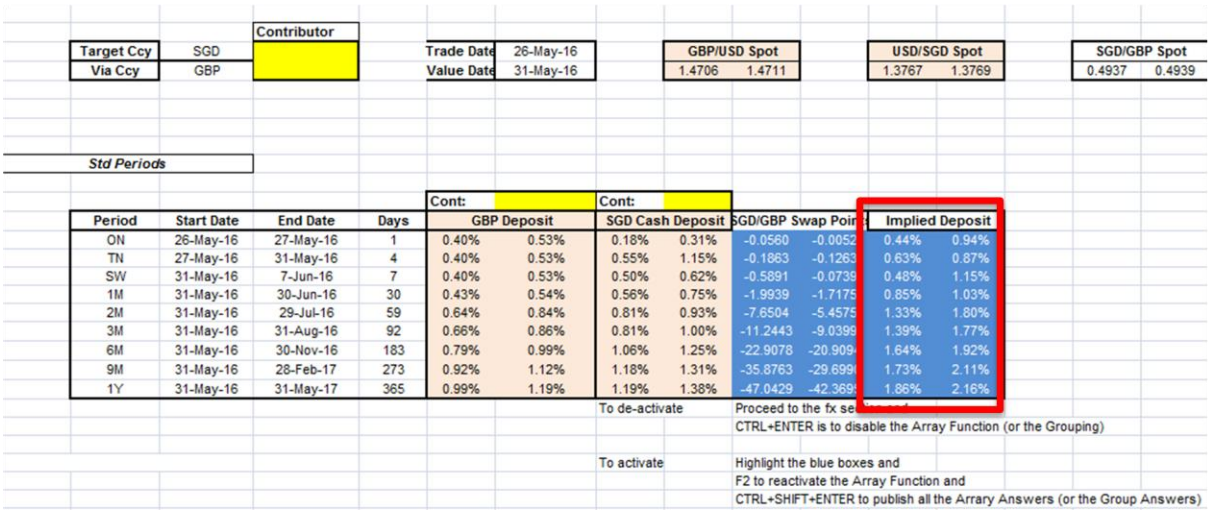
ON	0.180%	0.310%
TN	0.550%	1.150%
SW	0.500%	0.620%
1M	0.563%	0.750%
2M	0.810%	0.930%
3M	0.813%	1.000%
6M	1.063%	1.250%
9M	1.180%	1.310%
1Y	1.188%	1.375%

GBPDEPO= Updated at 14:10:41

		BID	ASK
GBPOND=	ON	0.4100	0.5400
GBPTND=	TN	0.4000	0.5400
GBPSWD=	SW	0.4500	0.5900
GBP1MD=	1M	0.4700	0.5900
GBP2MD=	2M	0.6100	0.8100
GBP3MD=	3M	0.6300	0.8300
GBP6MD=	6M	0.7700	0.9700
GBP9MD=	9M	0.8900	1.0900
GBP1YD=	1Y	0.9700	1.1700

GBPDEPO= in percentage

ON	0.410%	0.540%
TN	0.400%	0.540%
SW	0.450%	0.590%
1M	0.470%	0.590%
2M	0.610%	0.810%
3M	0.630%	0.830%
6M	0.770%	0.970%
9M	0.890%	1.090%
1Y	0.970%	1.170%



Target Ccy	SGD	Contributor
Via Ccy	GBP	

Trade Date	26-May-16
Value Date	31-May-16

GBP/USD Spot	
1.4706	1.4711

USD/SGD Spot	
1.3767	1.3769

SGD/GBP Spot	
0.4937	0.4939

Std Periods

				Cont:		Cont:					
Period	Start Date	End Date	Days	GBP Deposit		SGD Cash Deposit		SGD/GBP Swap Poin		Implied Deposit	
ON	26-May-16	27-May-16	1	0.40%	0.53%	0.18%	0.31%	-0.0560	-0.0052	0.44%	0.94%
TN	27-May-16	31-May-16	4	0.40%	0.53%	0.55%	1.15%	-0.1863	-0.1263	0.63%	0.87%
SW	31-May-16	7-Jun-16	7	0.40%	0.53%	0.50%	0.62%	-0.5891	-0.0739	0.48%	1.15%
1M	31-May-16	30-Jun-16	30	0.43%	0.54%	0.56%	0.75%	-1.9939	-1.7175	0.85%	1.03%
2M	31-May-16	29-Jul-16	59	0.64%	0.84%	0.81%	0.93%	-7.6504	-5.4575	1.33%	1.80%
3M	31-May-16	31-Aug-16	92	0.66%	0.86%	0.81%	1.00%	-11.2443	-9.0399	1.39%	1.77%
6M	31-May-16	30-Nov-16	183	0.79%	0.99%	1.06%	1.25%	-22.9078	-20.909	1.64%	1.92%
9M	31-May-16	28-Feb-17	273	0.92%	1.12%	1.18%	1.31%	-35.8763	-29.699	1.73%	2.11%
1Y	31-May-16	31-May-17	365	0.99%	1.19%	1.19%	1.38%	-47.0429	-42.369	1.86%	2.16%

To de-activate: Proceed to the fx se
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To activate: Highlight the blue boxes and
F2 to reactivate the Array Function and
CTRL+SHIFT+ENTER to publish all the Arrary Answers (or the Group Answers)

Subsequently, the different implied deposits were placed in a separate sheet in Excel, and comparing against the SGD Cash Deposit Rates.

When comparing with the Bid SGD Depo Rate, the Ask Rate for the corresponding implied deposits were used.

Also, conditional formatting was performed such that the box will light up in a light red whenever there is a money making opportunity.

SGD Cash Deposit		SGD Implied Depo via USD		SGD Implied Depo via EUR		SGD Implied Depo via GBP	
Bid	Ask	Bid	Ask	Bid	Ask	Bid	Ask
0.18%	0.31%	0.56%	0.71%	0.50%	0.98%	0.44%	0.94%
0.55%	1.15%	0.62%	0.75%	0.61%	0.88%	0.63%	0.87%
0.50%	0.62%	0.37%	0.94%	0.55%	1.32%	0.48%	1.15%
0.56%	0.75%	0.68%	0.85%	0.93%	1.09%	0.84%	1.04%
0.81%	0.93%	1.27%	1.64%	1.32%	1.70%	1.31%	1.79%
0.81%	1.00%	1.14%	1.42%	1.41%	1.77%	1.37%	1.77%
1.06%	1.25%	1.51%	1.69%	1.62%	1.89%	1.64%	1.92%
1.18%	1.31%	1.74%	2.09%	1.72%	2.06%	1.72%	2.10%
1.19%	1.38%	1.77%	2.02%	1.87%	2.18%	1.84%	2.21%

However, note that these data are only indicative and hence banks are likely to add a spread before quoting a tradable price and hence such money making opportunities are unlikely to exist in abundance due to fear of arbitrage.

3. Cross Currency Swap

There are four clear target markets with participants likely to require Cross Currency Swaps,

1. Investors who wish to purchase foreign assets but seek to eliminate foreign currency exposure (Searching for higher yield)

2. Debt issuers who can achieve more favourable rates by issuing debt in foreign currency (Searching for lower cost of capital)

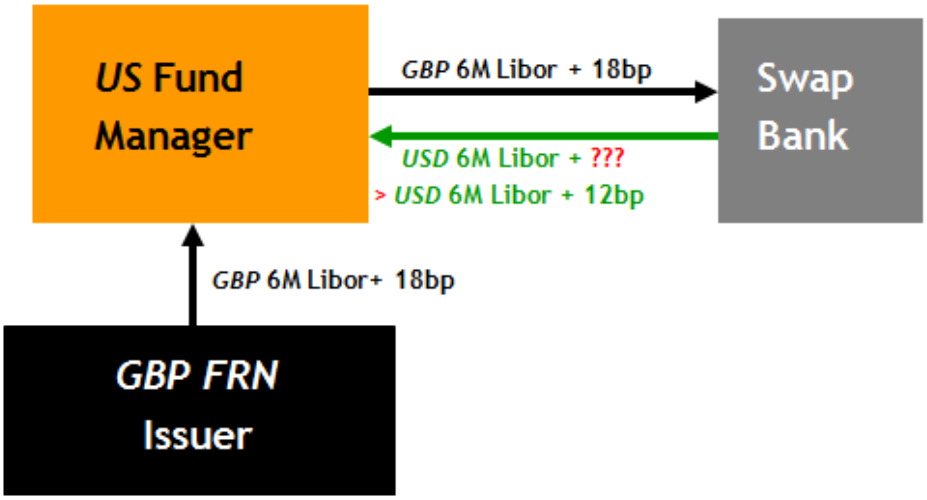
3. Liability managers seeking to create synthetic foreign currency liabilities (e.g. currency loss on the assets will be offset by a corresponding currency gain on the cross currency swap)

4. Convert from float to fixed or vice versa in Structured Notes.

Search for Higher Yield

A US fund manager is seeking to purchase 3 year USD assets with a minimum credit rating of AA and a yield in excess of USD 6M Libor + 12bp. However, there no such asset may exist in reasonable tradable volumes at this time. Hence, the fund manager may choose to create this **USD floating rate notes synthetically.**

In order to do so, the Fund manager may create a synthetic USD floating rate notes,



Hence, the Fund Manager would purchase a GBP FRN from an issuer and create a cross currency swap with a swap bank, paying a GBP FRN with the specifications as he purchased, or even a lower spread. As a result, he would receive a floating USD 6M Libor with a spread of more than 12bp as desired.

Note that the US fund manager bears the full credit risk of the underlying bond and should the bond default (GBP FRN), the fund manager is still obliged to make all remaining payments under the swap or reverse the swap at the current book value at that time

Hence the cash flows are as follows.

Initial cashflows

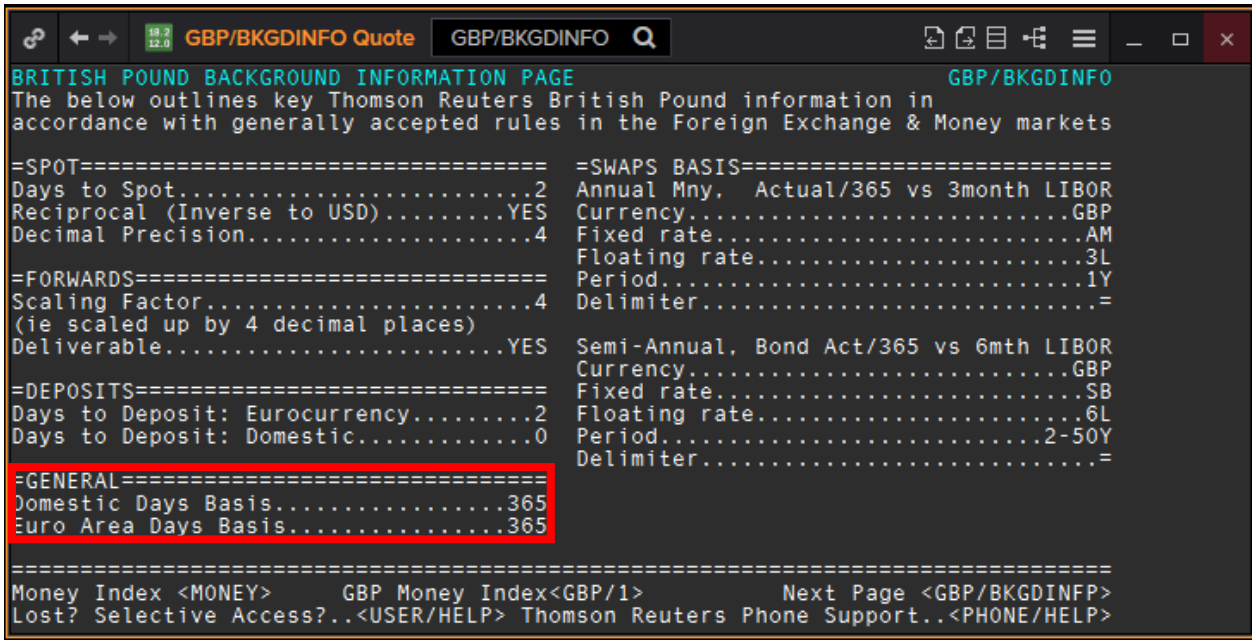
Investor buys Bond	-GBP 10 million
Currency Swap	+GBP 10 million
	-USD 20 million

At Maturity cashflows
(irrespective of the prevailing exchange rate)

Bond Redeems to Investor	+GBP 10 million
Currency Swap	-GBP 10 million
	+USD 20 million

Before we present the actual figures, one thing to take note of is the **Day Count Basis** (per year) **for Onshore and Offshore.**

In order to do so, we would go to the background information page again. "**<CUR>/BKGDINFO**", E.g. GBP/BKGDINFO

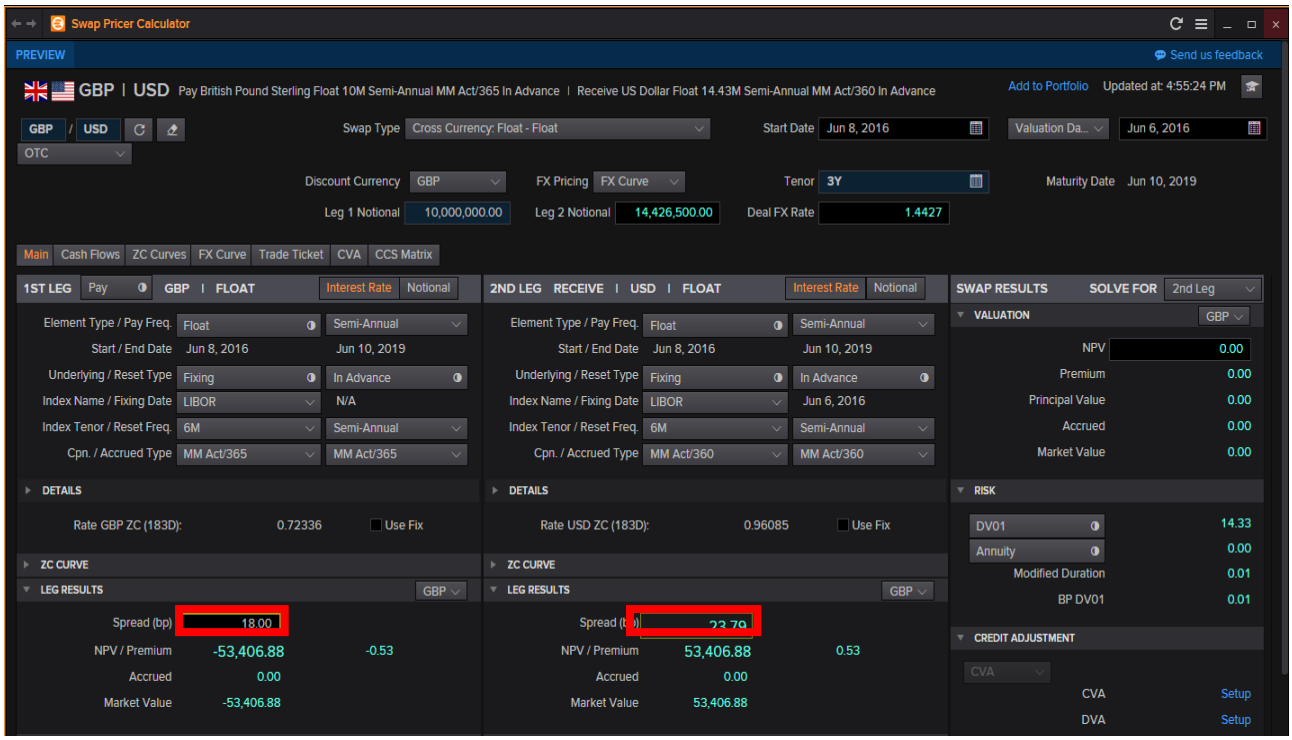


Domestic Day Basis: Onshore Bank's computation (e.g. Citibank in USA)

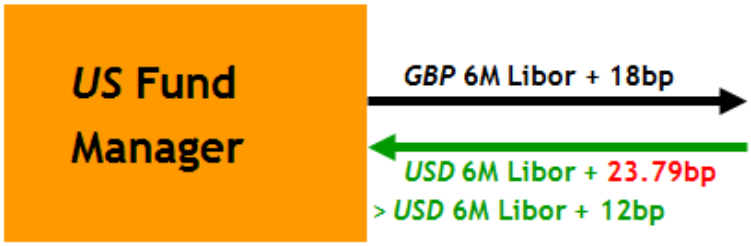
Euro Area Days Basis: Offshore Bank's computation (e.g. Citibank in Singapore)

In order to calculate the USD floating rate he would receive, he would make use of the **SWPR** application.

1. Change the Swap type to Cross Currency > Float-Float
2. Select the two currencies, the first being listed is the currency which the corporate will pay.
3. Select the tenor
4. Change the Swap Results, "Solve for" to 2nd Leg
5. Key in the spread the company has to pay



Thus, graphically, the exchange will occur as follows, for the cross currency basis swap arm of the agreement.



Hence, for 3 years, the corporate will

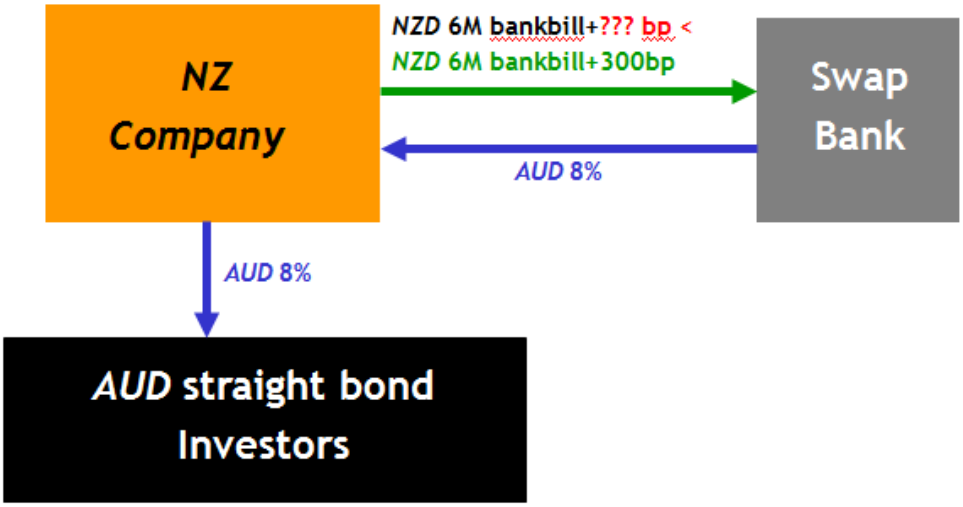
1. Pay GBP 6 months LIBOR + 18bp and
2. Receive USD 6 months Libor + 23.79bp

As this payment received is better than expected, the fund manager will use the swap transaction.

Search for Lower Cost of Capital

A New Zealand company is looking to raise NZD 100 million by issuing 9 year bonds. In the New Zealand domestic market, it would issue at a yield of **NZD 6M bank bill + 300 bp.** Alternatively, it can issue in Australia where there is a shortage of quality bonds, at a yield of 8%.

In order to do so, the NZ Company may create a synthetic NZD Debt or Loan,



Hence, the NZ Company would issue in Australia at a yield of 8%, and at the same time, obtain a cross currency swap which enables them to receive 8% AUD while paying in NZD as shown above.

Thus, the cashflows are as follows,

Initial cashflows

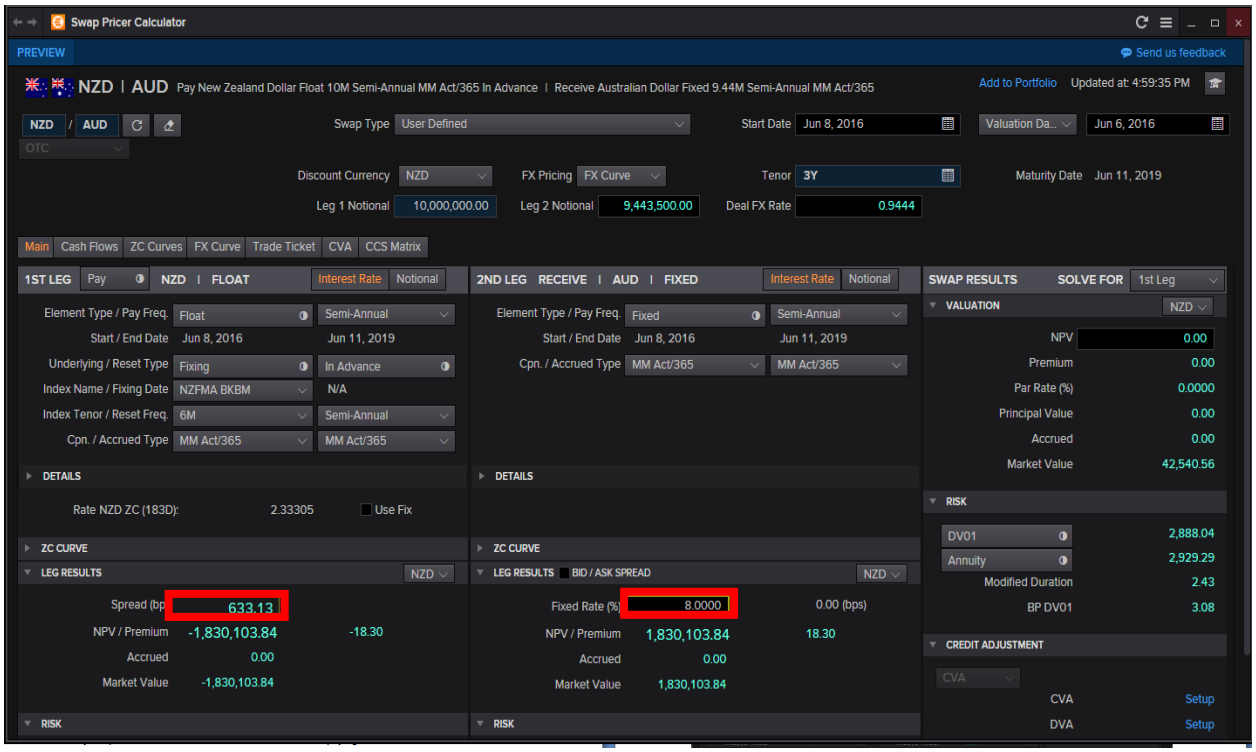
Company issues Bond	+AUD 80.2 million
Currency Swap	-AUD 80.2 million
	+NZD 100 million

At Maturity cashflows
(irrespective of the prevailing exchange rate)

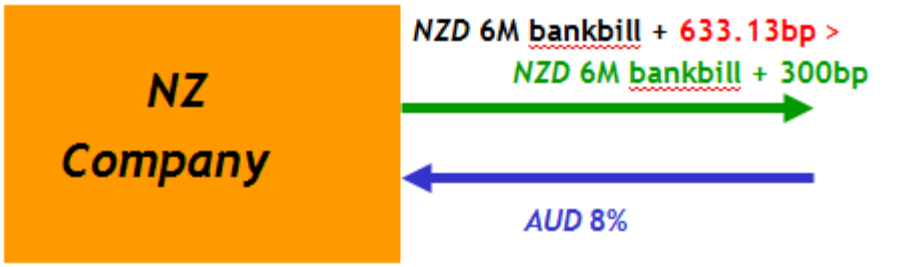
Bond Redeems to Investor	-AUD 80.2 million
Currency Swap	+AUD 80.2 million
	-NZD 100 million

In order to calculate the NZD floating rate that he would have to pay, he would utilize the **SWPR** application as follows,

1. Change the Swap type to **User Defined**
2. Select the two currencies, the first being listed is the currency which the corporate will pay.
3. Select the tenor
4. Change the Swap Results, "Solve for" to **1st Leg**
5. Key in the fixed rate that the company will receive



As a result, the spread calculated is 630.80bp and the transaction can be displayed graphically below,



Hence, for 3 years, the corporate will

1. Pay NZD 6 months bank bill + 633.13bp
2. Receive AUD 8% semi-annually.

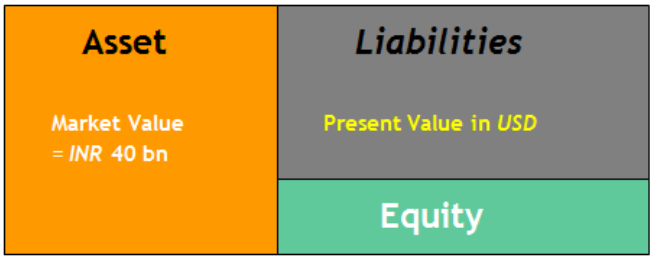
As this is worse, the corporate will not partake in the AUD arrangement.

Create Synthetic Foreign Currency Liabilities to reduce volatility of balance sheet

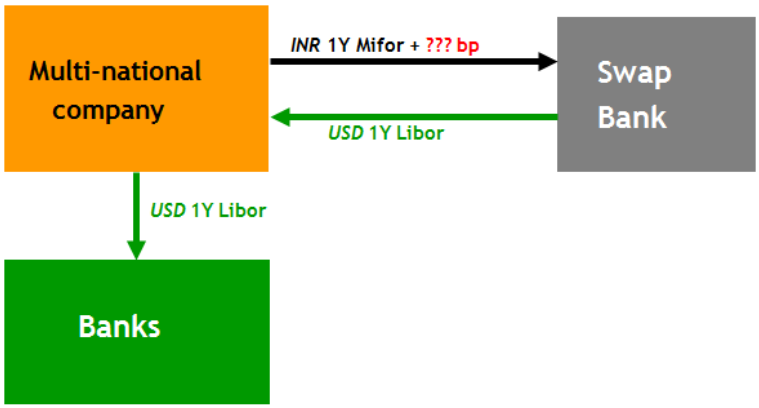
A US Company uses USD as its base currency but has Assets denominated in INR. The Board of Directors are concerned that any fluctuations in the spot FX rate will lead to an increase in volatility of earnings.

In total, there are INR 40 billion Assets with no corresponding INR liabilities to offset these assets. The majority of company liabilities are denominated in USD.
The currency exchange rate is currently 1 USD = 60 INR

Balance Sheet before Cross Currency Swap



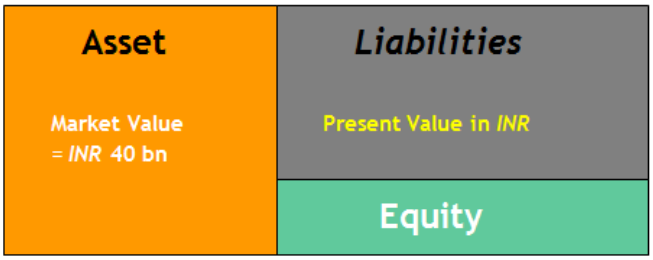
As a result, the company has considered raising INR debt in the India market and repaying *USD* debt as a way to hedge this exposure and hence would need to pay **INR 1Y MIFOR + ??bp**



Assuming that there is no new requirement to generate cash and so the company elects not to exchange principal at the start of the deal, so there are no initial cashflows.

In effect, the company has transferred some of its *USD* liabilities into *INR* liabilities to offset the *INR* assets it owns and thereby reducing its currency exposure.

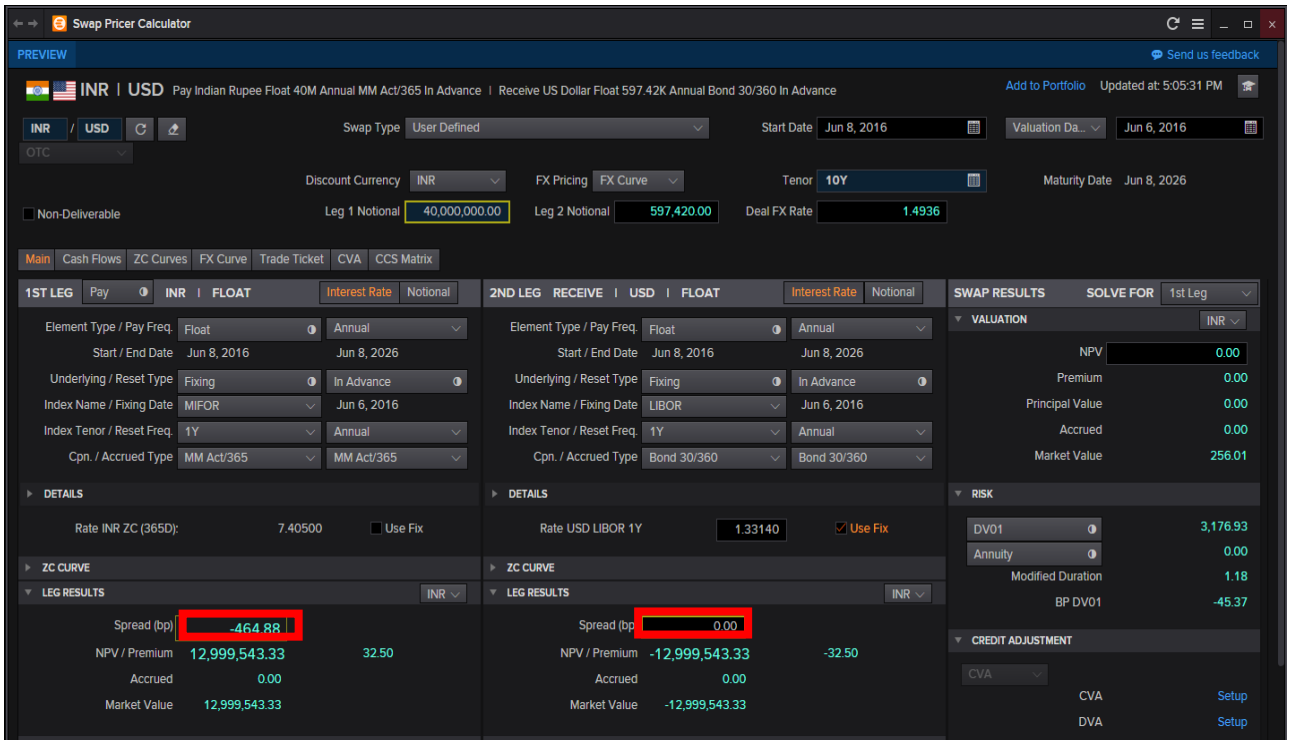
Balance Sheet after Cross Currency Swap



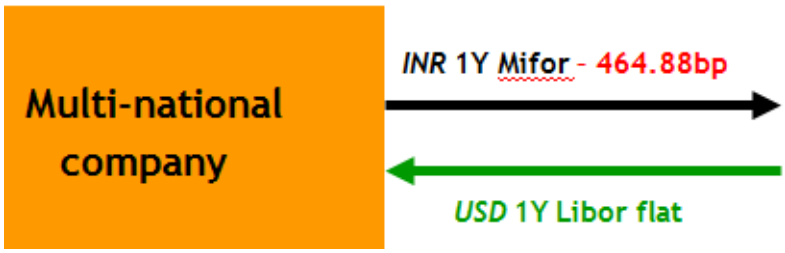
Hence, any currency loss on the assets will now be offset by a corresponding Currency gain on the CCS, effectively hedging against any FX exposure.

In order to calculate the spread that the company has to pay, they would use the **SWPR** application as follows,

1. Change the Swap type to **User Defined**
2. Select the two currencies, the first being listed is the currency which the corporate will pay.
3. Select the tenor
4. Change the Swap Results, "Solve for" to **1st Leg**
5. Key in the spread for the USD arm as being 0.00 (flat rate)



Hence, the spread calculated is -464.88bp and can be displayed graphically as shown below.



Therefore, for 10 years, the company will

1. Pay *INR* 1 year MIFOR – 464.88np and
2. Receive *USD* 1 year LIBOR flat.

Convert from float to fixed or vice versa in Structured Notes

For this final case study in the FX and Money Market segment, let us analyse a real life scenario:

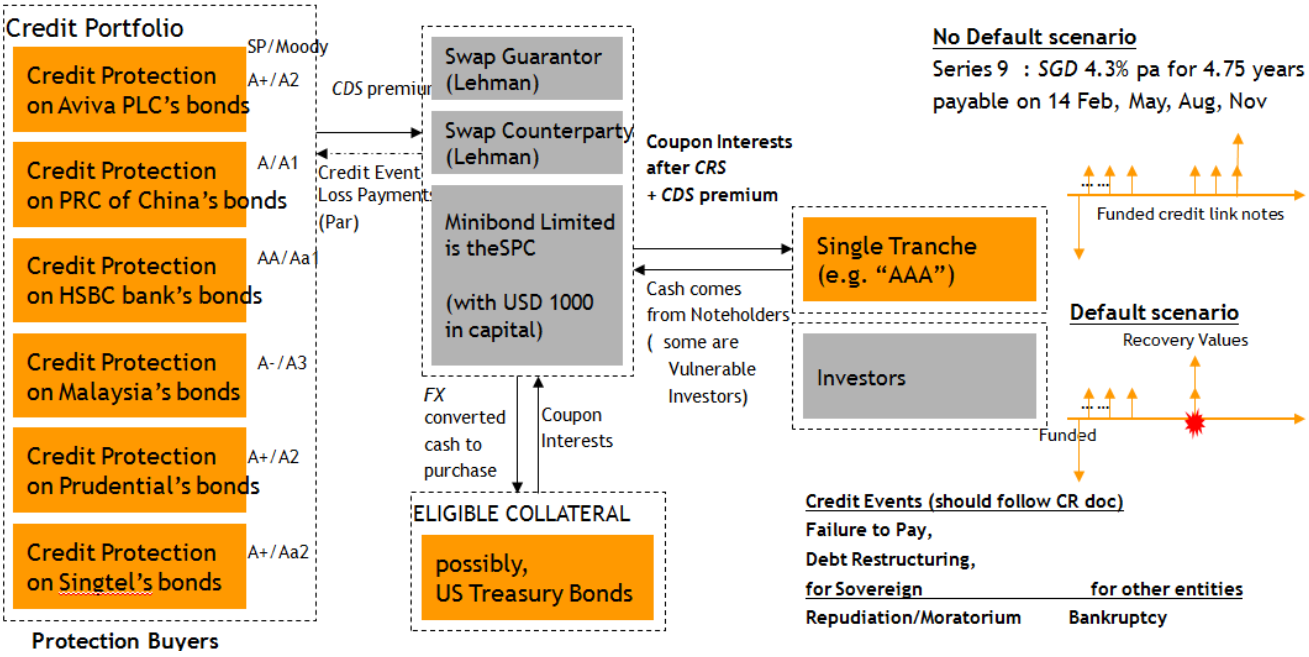
Reverse Engineering on Lehman Brother's Minibond Series 9

Minibonds were a series of high risk structured product which paid the investor a regular stream of interest until maturity, at which point the investor was entitled to a redemption amount as stipulated in the contract. What ensued after the Lehman Brother's collapse was the default and early redemption of these minibonds which caused over 10,000 investors in Singapore to lose their investments, amounting to over S$500 million.

Lehman Brother's Minibond Series 9 was a 4.75 year structured notes that pays quarterly coupons annualised at 4.3% in SGD.

We will look at a possible reconstruction of Lehman Brother's Minibond Series 9.

The Credit Portfolio of the Minibond Series contains mainly six 5 Year Credit Default Swaps.



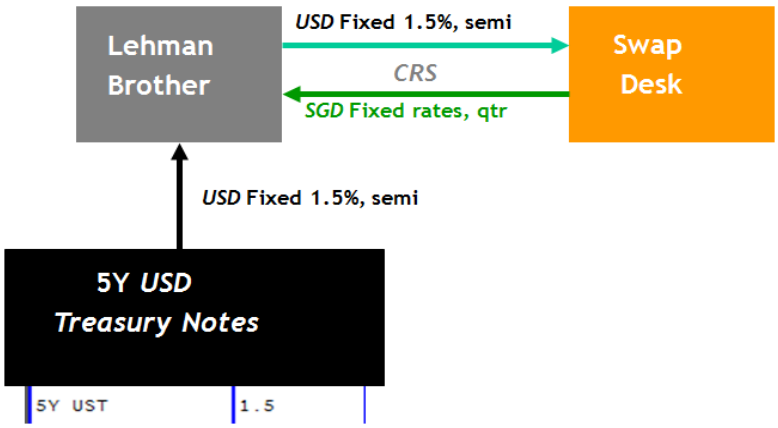
Unbeknownst to most buyers, the minibonds held a high amount of investment risk and risk factors as they could potentially lose all or a substantial part of their investment in the Notes.

For Minibond series 10, Interest Rate Swap could be utilized to convert from fixed to floating and vice versa. While for Minibond series 9, Cross Currency Swap may be utilized to convert multi-period cashflow, from one currency to another.

There were 2 Cross Currencies involved in Series 9. The first being,

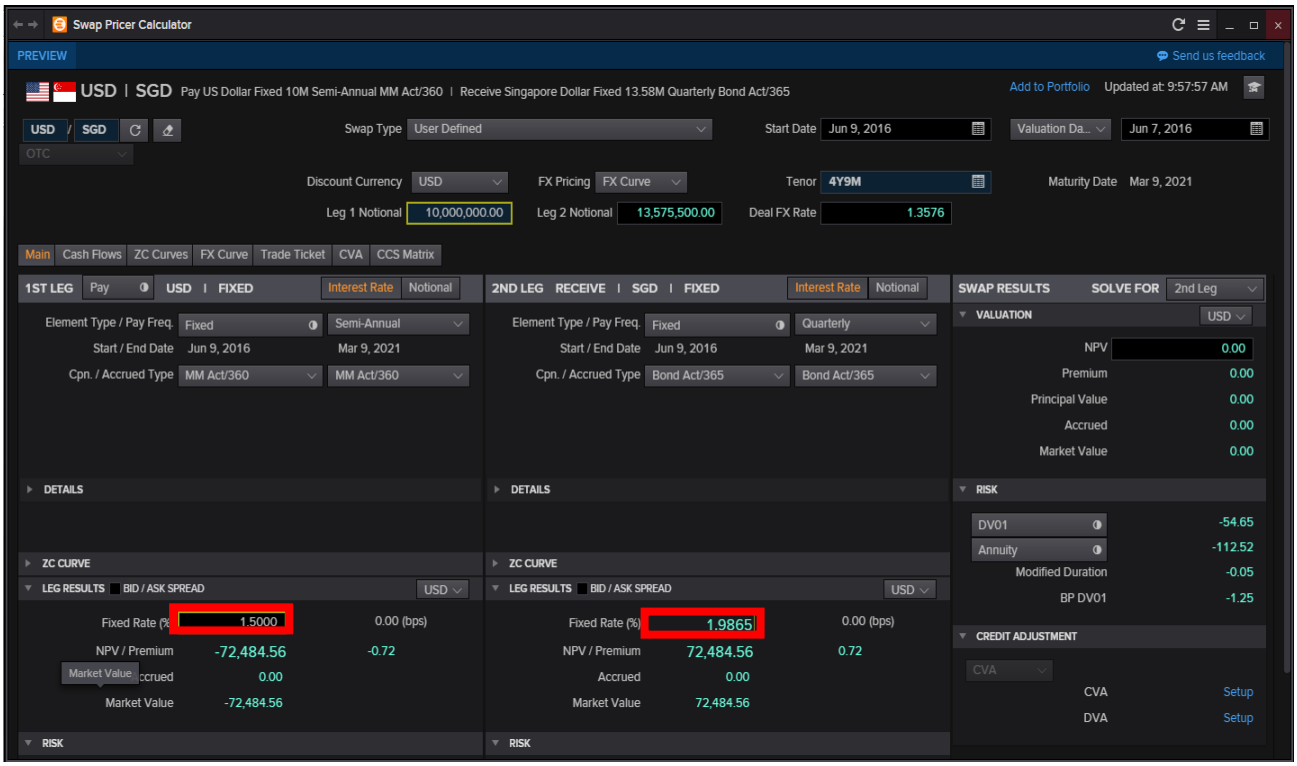
For 4Y9M years, Lehman Brother's will

1. Pay *USD* Fixed Rates same as the 5Y USD Government Treasury Notes
2. Receive *SGD* fixed rates



Hence, on **SWPR**, the following computation could be performed.

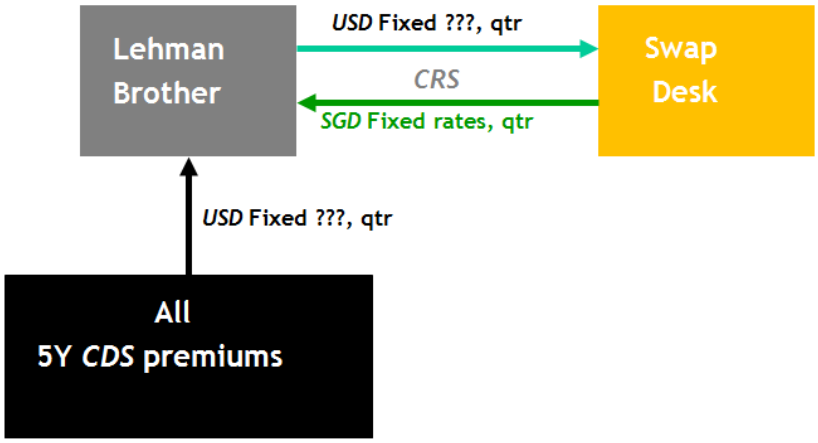
1. Change the Swap type to **User Defined**
2. Select the two currencies, the first being listed is the currency which the Lehman Brother would pay.
3. Select the tenor
4. Change the Swap Results, "Solve for" to **2nd Leg**
5. Key in the spread for the USD arm as being 1.5000% (5Y rate of USD Treasury Notes)



Hence, the fixed rate that they will receive is 1.9865%.

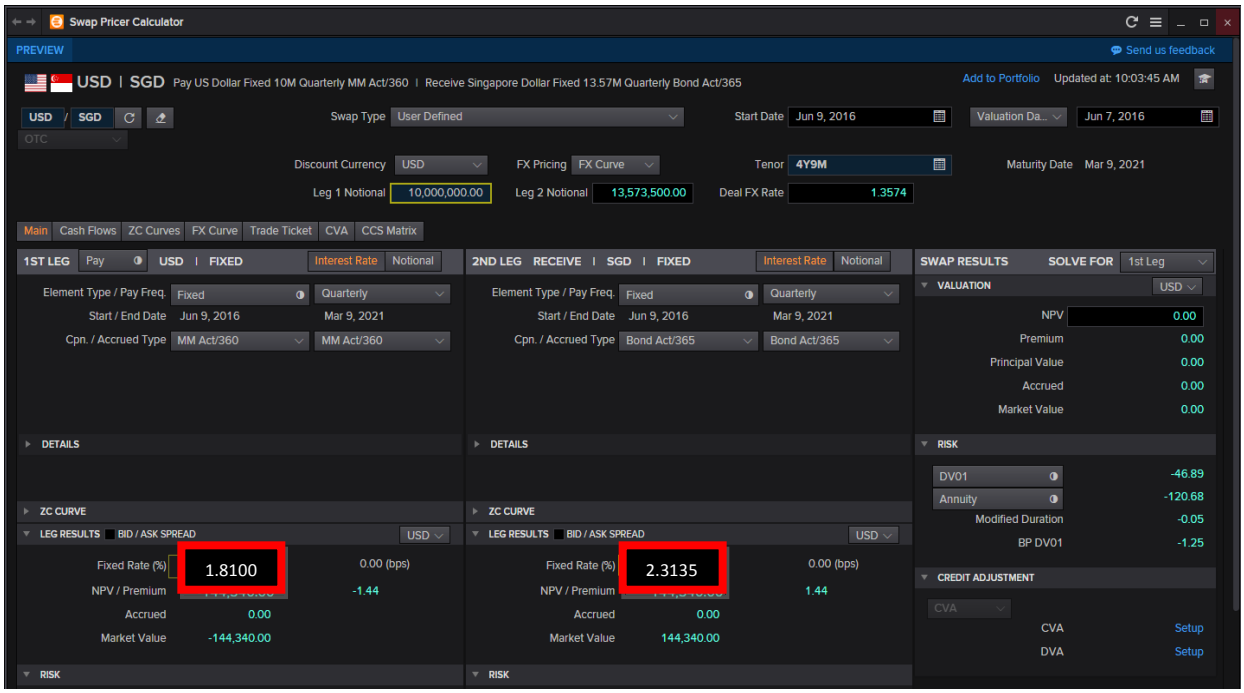
The second being, for 4Y9M years, Lehman Brother's would

1. Pay *USD* Fixed Rates = All 5Y CDS premium collected
2. Receive *SGD* fixed rates = 4.3% - 1.9865% (which is the SGD fixed rate calculated from the first CRS)
   = 2.3135%



Hence, on **SWPR**, the following computation could be performed.

1. Change the Swap type to **User Defined**
2. Select the two currencies, the first being listed is the currency which the Lehman Brother would pay.
3. Select the tenor
4. Change the Swap Results, "Solve for" to **1st Leg**
5. Key in the spread for the SGD arm as being 2.3135% (Rate calculated in first CCS)



Hence, here the fixed USD rate Lehman Brother received from all CDS were 1.81%.

Part 8: Bonds

THOMSON REUTERS
EIKON™

Eikon shortcuts: Fixed Income

APPS & TOOLS FOR INDIVIDUAL BONDS Note: In order to see the tools select the bond by hitting the down arrow and then hit the <space> bar. e.g. "US10YT=RR Q"	
DESC	Basics
Q	Quote
CHT	Chart
NEWS	Issuer News
ALQB	All Quotes
HOLD	Holdings
CALC	Bond Calculator
QH	History
DS	Debt Structure
NOTE	Notes
OV	Overview
SCHD	Payments
RES	Research
VALS	Valuations

MARKETS	
HOME	Home page
CNV	Convertibles Guide
CORP	Corporate Bond Guide
EE	Economic Events Monitor
CMO	ABS and CMOs Guide
CRDE	Credit Derivatives Guide
CREDIT	CreditViews
GOV	Government Bond Guide
IFR	IFR Markets Guide
IRD	Interest Rate Derivatives Guide
LOANS	Loans Guide
MBS	Mortgage Backed Securities Guide
MBSDB	MBS Dashboard
MUNI	Municipal Bonds Guide
BGC	BGC Market data Broker Guide
GFI	GFI Broker Guide
ICAP	ICAP Guide
MAX	MarketAxess Guide
TRAD	Tradition Broker Guide
TW	Tradeweb Guide

REAL TIME MONITORING	
ALLQ	All Quotes
Q	Quote
QL	Quote List
QLI	Quote Line
MON	Monitor
TAS	Time & Sales
TICK	Ticker
OPW	Option Watch

CALCULATORS & CHARTS	
ALLQ	All Quotes
ASWP	Asset Swap Calculator
AVRG	Average Calculator
BNDC	Bond calculator
BDFU	Bond Futures
BDHG	Bond Hedge
BDRE	Bond Repo
BDRN	Bond Return
BDST	Bond Strategy
CAPF	Cap and Floor
CDSV	Credit Default Swap
CONV	Convertible
CORR	Correlation Matrix
FRN	FRN
FWDC	Forward Curve
FRAA	FRA Arbitrage
MBSD	MBS Dollar Roll
OASC	Option Adjusted Spread Calculator
REGR	Regression Analysis
RVBC	Relative Value Basis Chart
STIR	STIR Futures
SWCM	Swap Curve Monitor
SWPN	Swaption
SWPR	Swap Pricer
TEDC	TED Spread
ZCBR	ZC Builer
HRA	Historical Return Analysis
MACROX	Macro Explorer

CHARTING	
CHT	Chart
CBOOK	Datastream Chartbook
CDSC	Credit Default Swap chart
CURV	Curve chart
ECOC	Economic Indicator Chart
REBC	Rebasing Chart
RVBC	Relative Value chart
TEAC	Technical Analysis Chart
VOLC	Volatility Chart

SEARCHES	
MBSSRCH	Agency Pools and TBAs
BNDFOSRCH	Bond and STIR Futures and Options
BNDREPOSRCH	Bond Repos
CMOSRCH	CMOs/ABS
CDSWSRCH	Credit Default Swap Indices
CDSSRCH	Credit Default Swaps
CURVESRCH	Curves
GOVSRCH	Government and Corporate Bonds
LOANSSRCH	Loans
IRDOTCSRCH	OTC Interest Rate Derivatives
MUNISRCH	US Municipals
ECONSRCH	Economic Indicators
FUTSRCH	Futures Search
OPTSRCH	Options Search

NEWS	
NEWS	News Monitor
TOPNEWS	Top News
IFR	IFR Markets
BRV	Reuters BreakingViews

PORTFOLIO MANAGEMENT	
PORT	Portfolios and Lists
DASH	Portfolio Dashboard
CPA	China Portfolio Analytics
BMON	Bond Monitor
CDSMON	CDS Monitor
SWPO	Swap Portfolio

HELP	
FAQ	Frequently Asked Questions
HELP	Online Help

1. Overview of Bonds

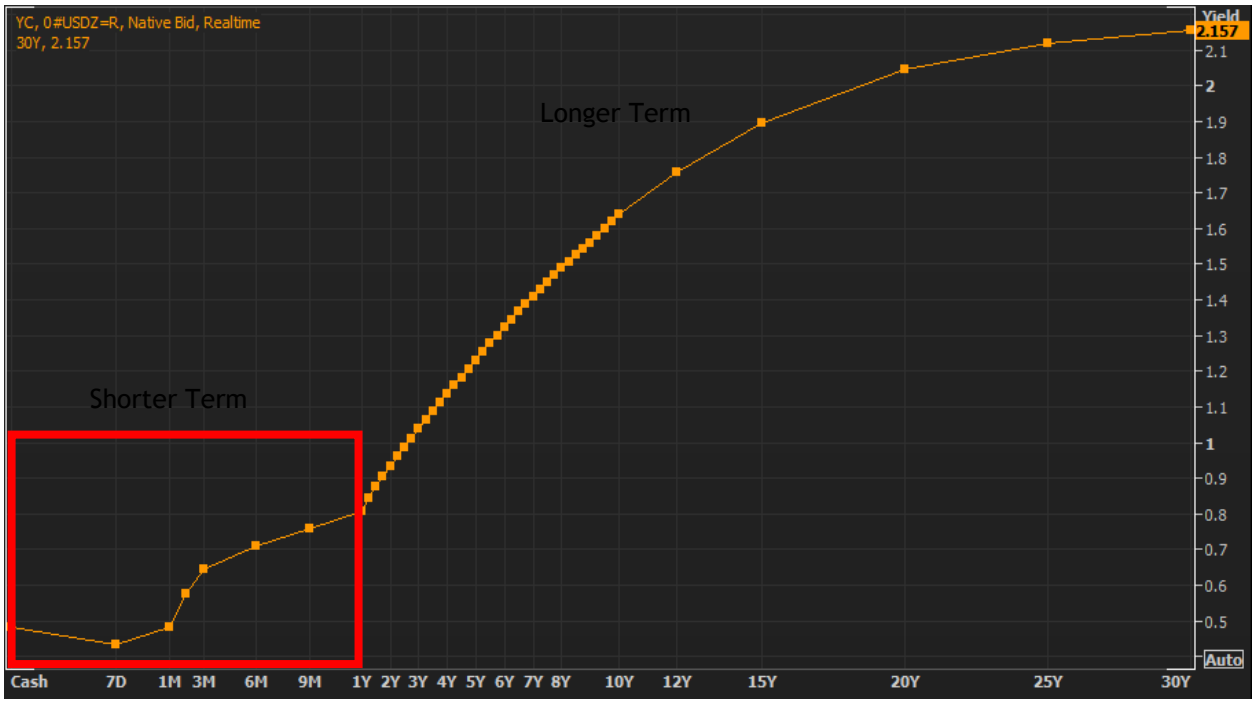
What is a Yield Curve?

A yield curve is a term structure of interest rates. Hence, it is a graphic line chart that shows interest rates at a specific point for all securities having equal risk but *different maturity dates*.

One example of a yield curve is the zero-coupon curve covered previously. A *zero-coupon bond* which term structure is that of a zero-coupon curve, is issued at a discount and redeemed at par.

An example of a yield curve is as follows. In order to generate the following curve, these steps could be taken.

Press **F4** in the Eikon Toolbar to open the **Quote** Application.
Type in **<USDZ=R>** and press **F3**. (Thomson Reuters USD Zero Coupon Curve)
Press **F10** to acquire the chart as follows below.



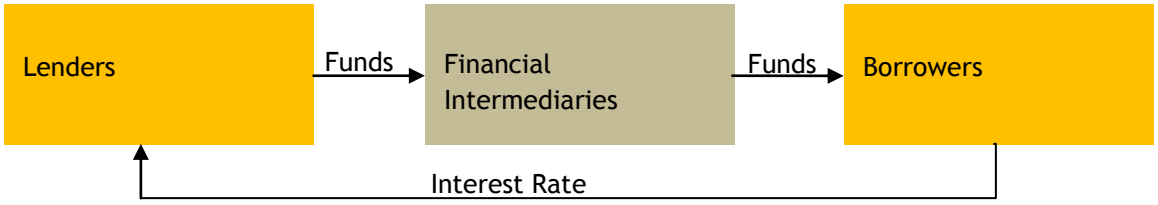
The money market is the market for the purchase (lending) and sale (borrowing) of short-term financial assets, each with time periods spanning less than 1 year.

On the other hand, the capital market is the market for the purchase and sale of medium-term and long-term financial assets, with each over a year.

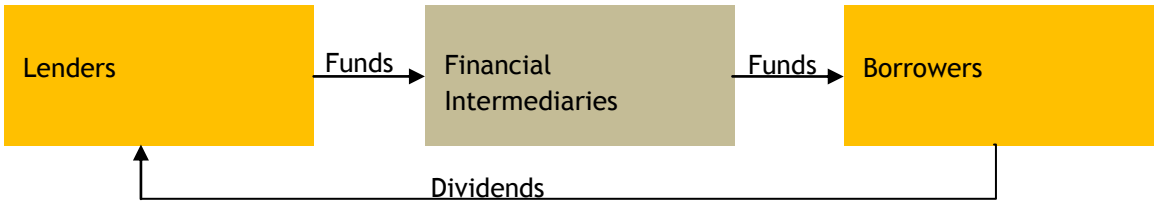
Difference between Bonds and Equities

Bonds and Equities are key instruments in the capital markets, however, the way that they are structured are vastly different. This can be observed through the graphical depiction below,

Bonds



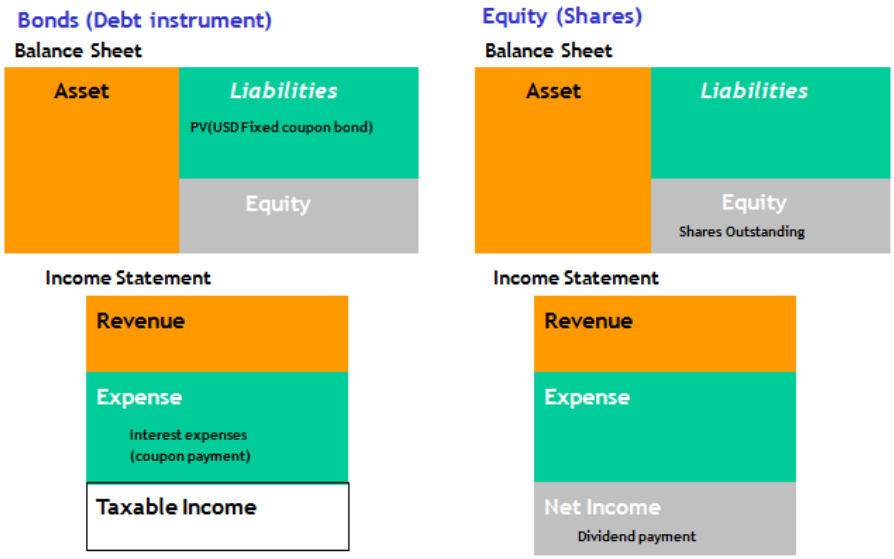
Equities



Whether a share is undervalued or overvalued can often be worked out by just looking at the share price, as the share price is an indicator of the value assigned by the stock market to the company and what accountants would say is behind its underlying value (profits, cashflows and assets).

However, in the case of a bond, the valuation criteria are a little different since bond prices often indicate the likely return you will earn and measuring this against the risk you will run into while holding it.

There is also a different in the balance sheet and income statement of companies who choose to issue bonds as compared to companies who choose to issue shares.



Companies that issue bonds will have the present value of the bond issuance (e.g. USD Fixed coupon bond) in their liability account. Bond issuers are also obliged to pay interest, as compared to dividends which they can choose not to pay.

The interest expense paid out by the company would be within their income statement with the deductible expenses section, which is before the taxable income line. Hence, the interest that they pay out to their bond holders would decrease their taxable income, making it more profitable for the company to issue.

On the other hand, companies that issue shares will not have the present value of the shares in their liability account as it is almost impossible for the company to present value the value of their shares since it is tied to the implied value of the company.

The dividend payments issued out to their shareholders are therefore not deducted from their taxable income and hence does not decrease the overall amount of tax the company has to pay. Hence, companies will often evaluate the effectiveness of issuing a bond or equity prior to any issuance.

Features of a Bond

A bond typically has the following features.

1. Interest

In any bond contract, the amount of coupon paid out per period (annually, semi-annually, quarterly, monthly, or even bi-monthly) would all be stipulated. The date of the first coupon payment will also be included within the specifications of the contract.

2. Maturity

The maturity date of the bond instrument would also be stated. This would allow the total time period for the company and its bond holders to present value the bond effectively. One exception would be a perpetual bond which is viewed as having no maturity date.

3. Ownership

The ownership of the bond would pass over to the bond holder after the purchase of the bond.

4. Securitization

The bond may contain some sort of securitization which allows the bond holders some sort of security should the firm default on their payment. Thus, this acts as a safety-net of sorts to protect bond holders from potential default.

2. Economics and Bond Markets

Money Market and Bond Yield Poll

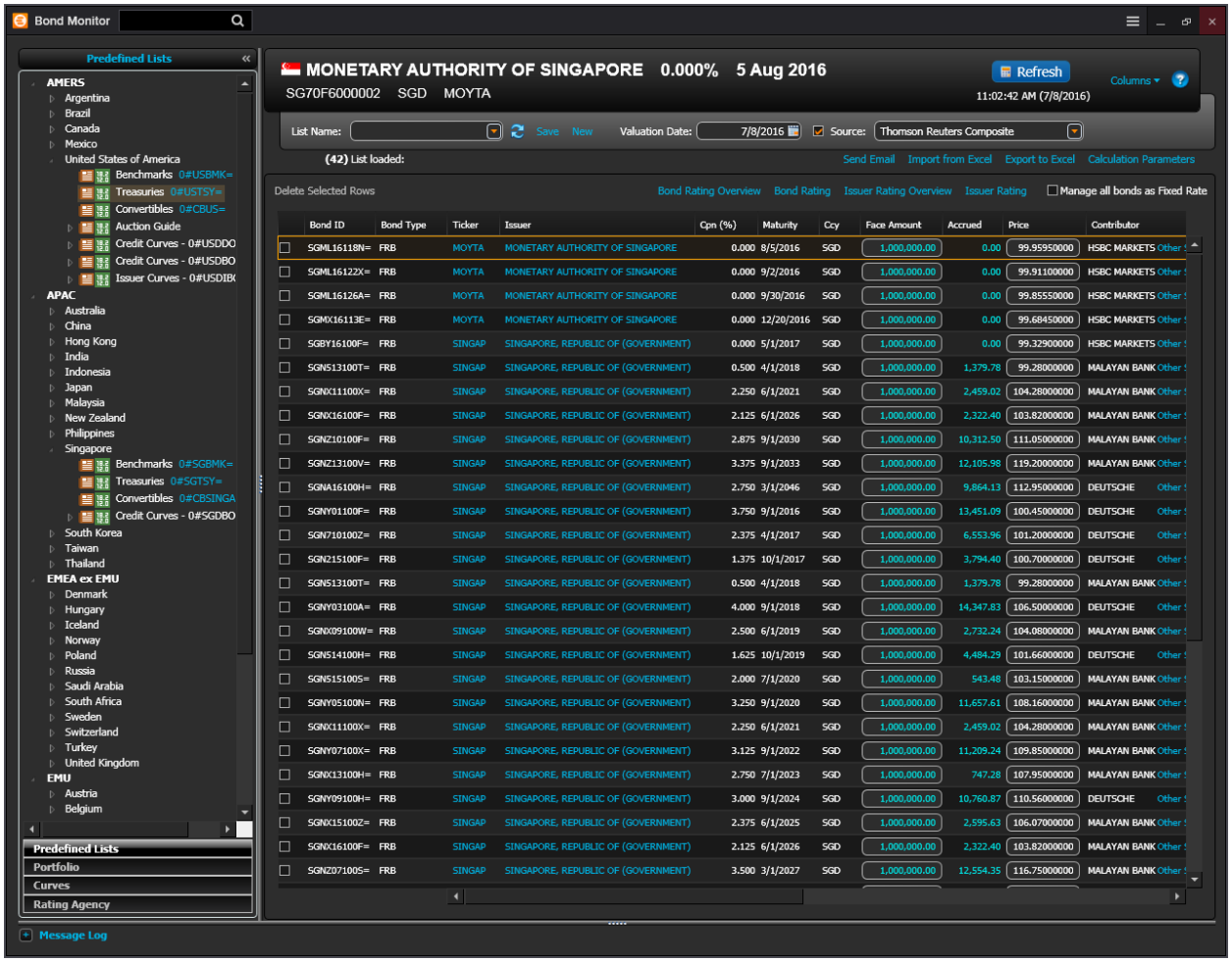
The following chart could be obtained

1. In the Eikon Toolbar, type **<MBYP>** for Money Markets and Bond Yield Polls
2. Choose the country you wish to search at the poll type
3. If any specific contributor is favoured, a line representing their forecast could be added by clicking the box next to their name.

From this, the different expectations of rates and term structures could be observed for different countries, according to the probability of occurrence and the minimum and maximum values are also predicted.

Bond Monitor <BMON>

One useful application on Eikon is the Bond Monitor application. Using this application, users can monitor a series of bonds, such as the different benchmark, treasury, issuer bonds etc on one page.



Users can also import and export their table from Excel as well as to specify the calculation parameters and whether they would like to manage all the bonds as fixed rate bonds.

In order to utilise this page, users can do the following,

1. In the Eikon Toolbar, search **<BMON>** in order to open the application

2. Select the bonds that you wish to search for in the left most column.

Using Bond Monitor, you can display the latest ratings from Fitch, S&P, Moody's, and up to three other agencies. Add ratings and related information your list by choosing a new field such as Rating #1 (see Choosing your data) then choosing an agency in the sidebar.

You can apply a rating template by choosing it from the Columns menu or by clicking one of the template names above your bond list. When you apply a rating template, the sidebar opens automatically to let you choose one or more agencies.

Rates View <RV>

Rates Views give users a quick and easy access to a whole range of key screens for them to monitor rates activity; identify trade opportunities and its optimal allocation, track the global market from a single page and to monitor Tradeweb prices and gauge market direction and latest movements.

In addition to providing data, Rates Views also contain several inbuilt tools to aid users' decision making. They can:

- Chart historical time series and technical analyses for any data field in the page
- Access related news headlines
- Create custom lists of instruments or strategies
- Create and initiate multi-security trades
- Integrate data into their workplace.

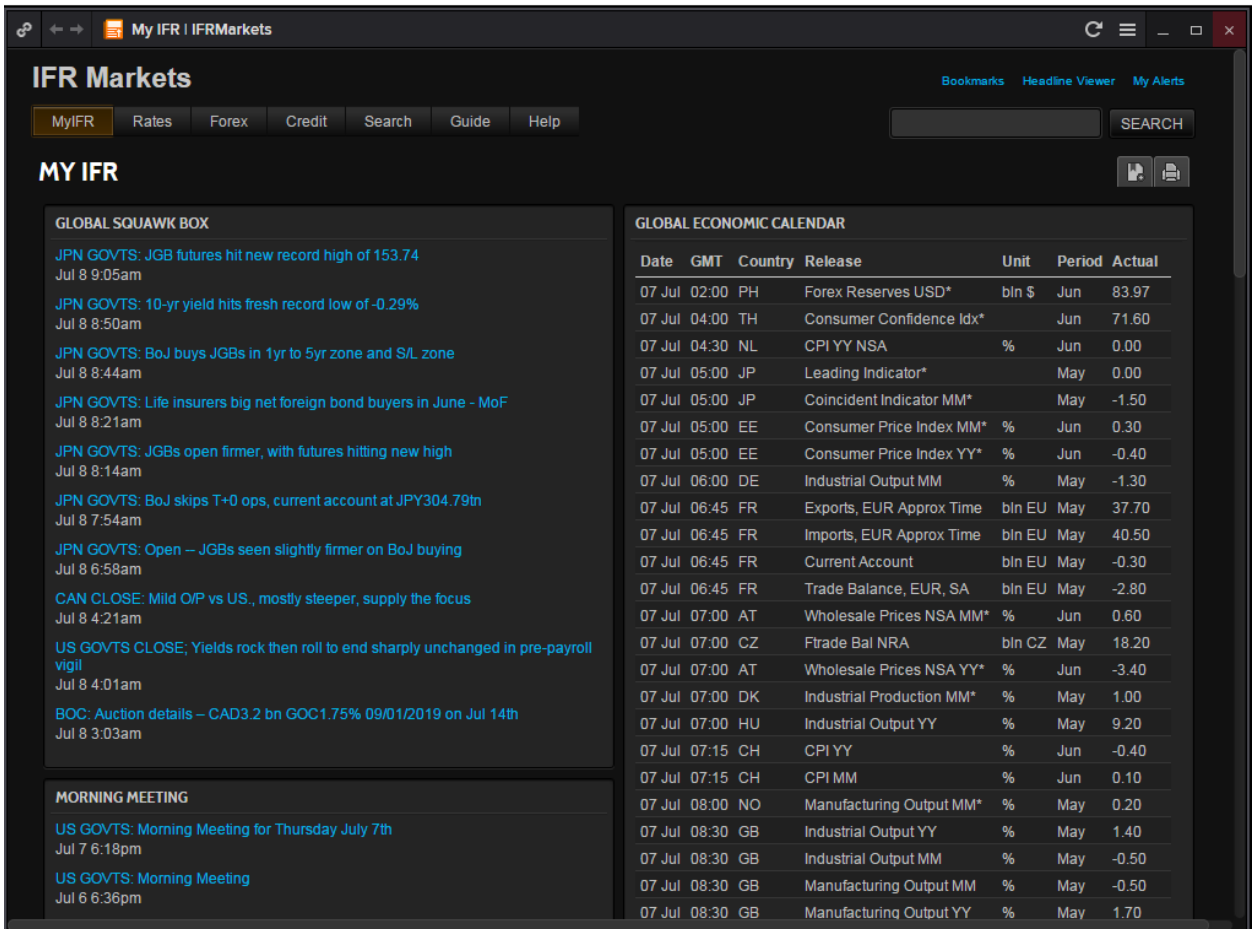
International Financing Review (IFR)

<IFR>

The International Financing Review **<IFR>** enables users to access a 24-7 unique news, commentaries and analyses coverage of developments in:

- Credit
- Rates
- Foreign Exchange

In the Eikon Toolbar, search **<IFR>** in order to open the application. From here, users are able to set alerts for different events, by selecting "My Alerts" at the top of the page.



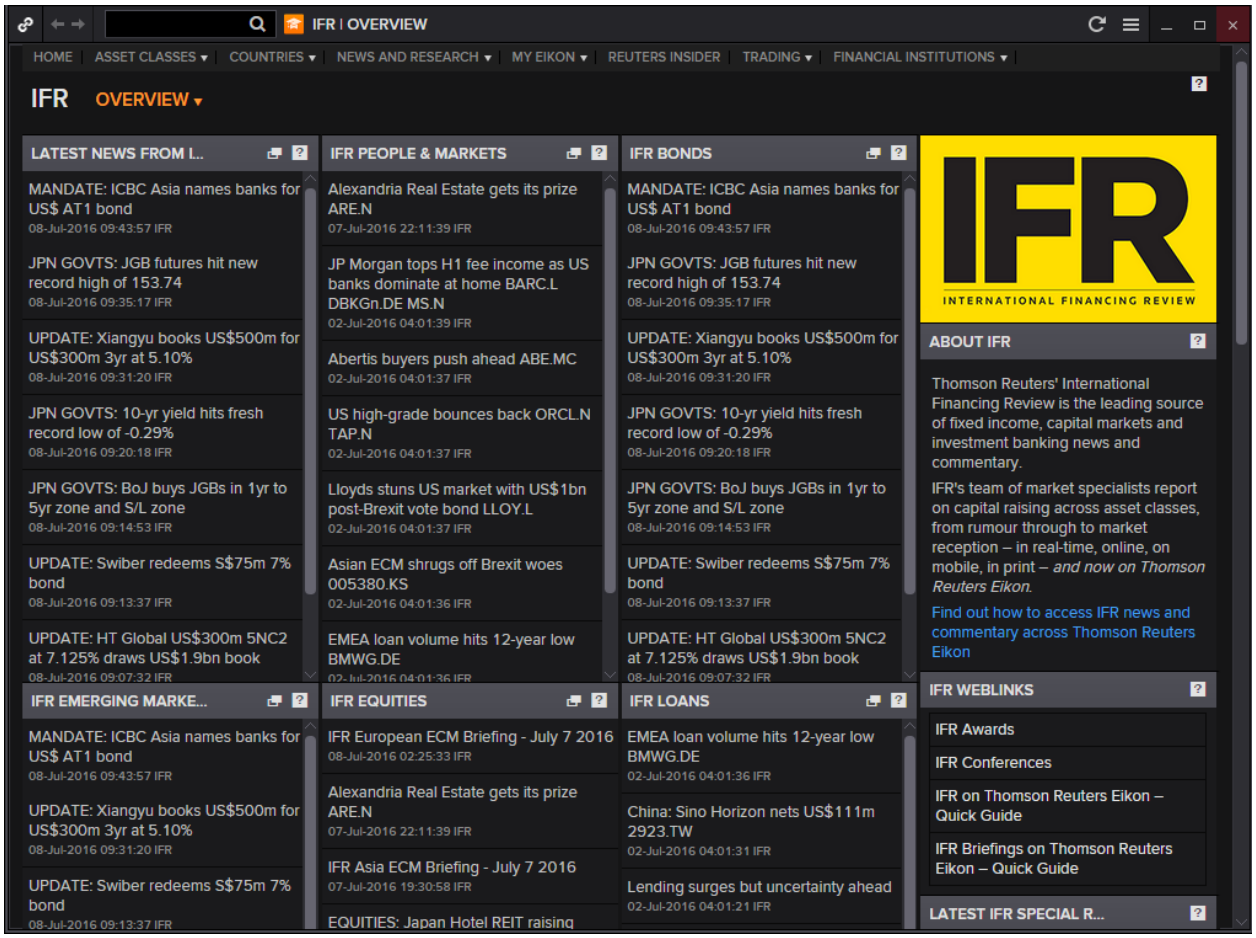
Using the IFR Markets page, users can view the different news headlines for global markets as well as the economic calendars for different countries and releases.

Note that for Alerts Morning Digests includes content submitted between 6pm to 6am. The Evening Digests include content submitted between 6am to 6pm. All times are dictated by time zone preferences as noted in Eikon.

<IFRI>

Another International Financing Review page that may be useful is the **<IFRI>** page which is essentially a News page which provides an overview with different headline news for different markets as well different asset classes.

In the Eikon Toolbar, search **<IFRI>** to open the application.



3. How to Get Indicative Data about Bonds

Bond Price

1. In the Eikon Toolbar, navigate to the HOME page
2. Under Asset Classes > Fixed Income to arrive at the Fixed Income Overview Page.
3. In the left selection pane, choose <Bonds> for the overview pages on Bonds

On this page, the different benchmark for bonds can be observed, allowing us to estimate a potential yield of a similar curve.

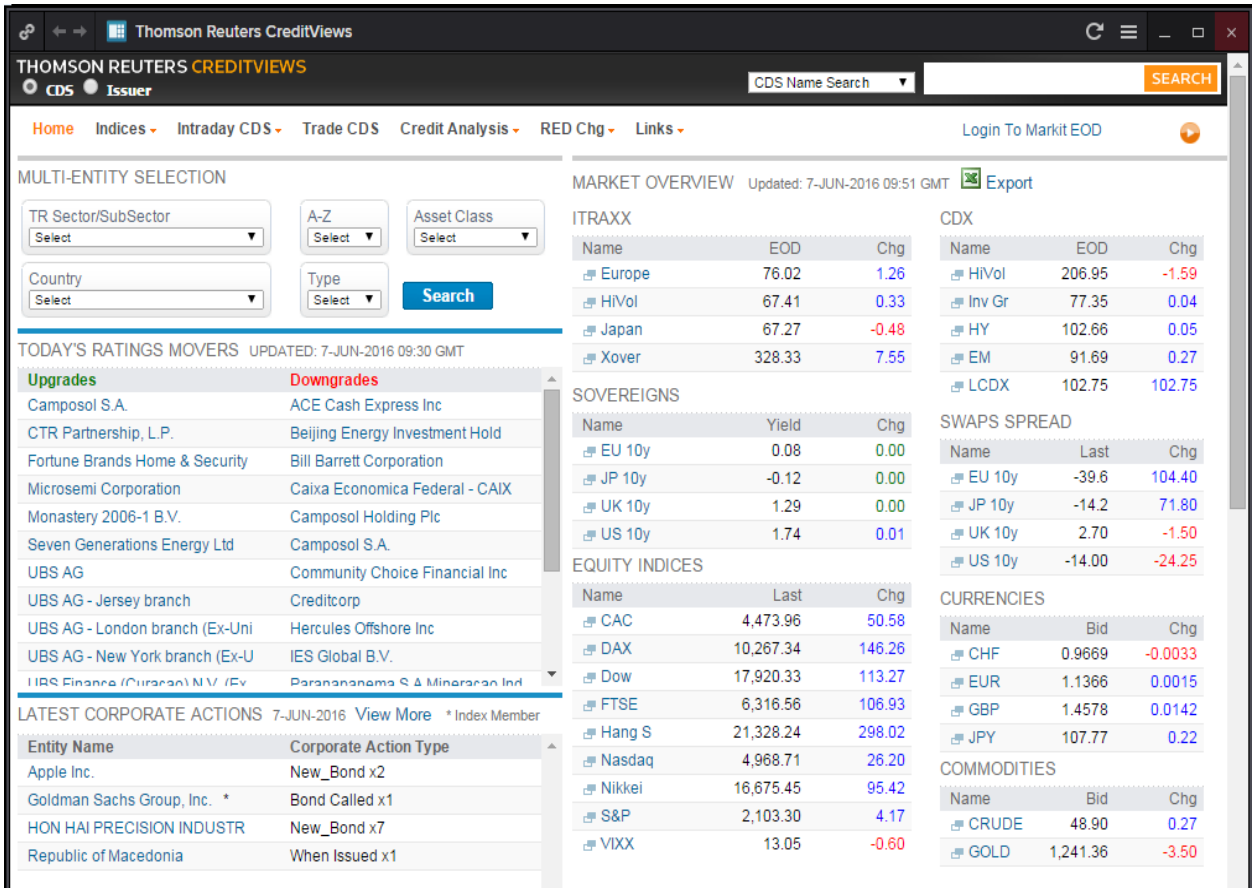
We can also garner the following data about a government bond

- Description
- Chart
- Notes etc
- ISIN code: Universal code for the bond.

CDS Price - CreditViews <CREDIT>

For CDS Data, one can refer to the CreditViews page for additional data.

1. In the Eikon Toolbar, navigate to the HOME page
2. Under Asset Classes > Fixed Income to arrive at the Fixed Income Overview Page.
3. Under Quicklinks, select Credit Views



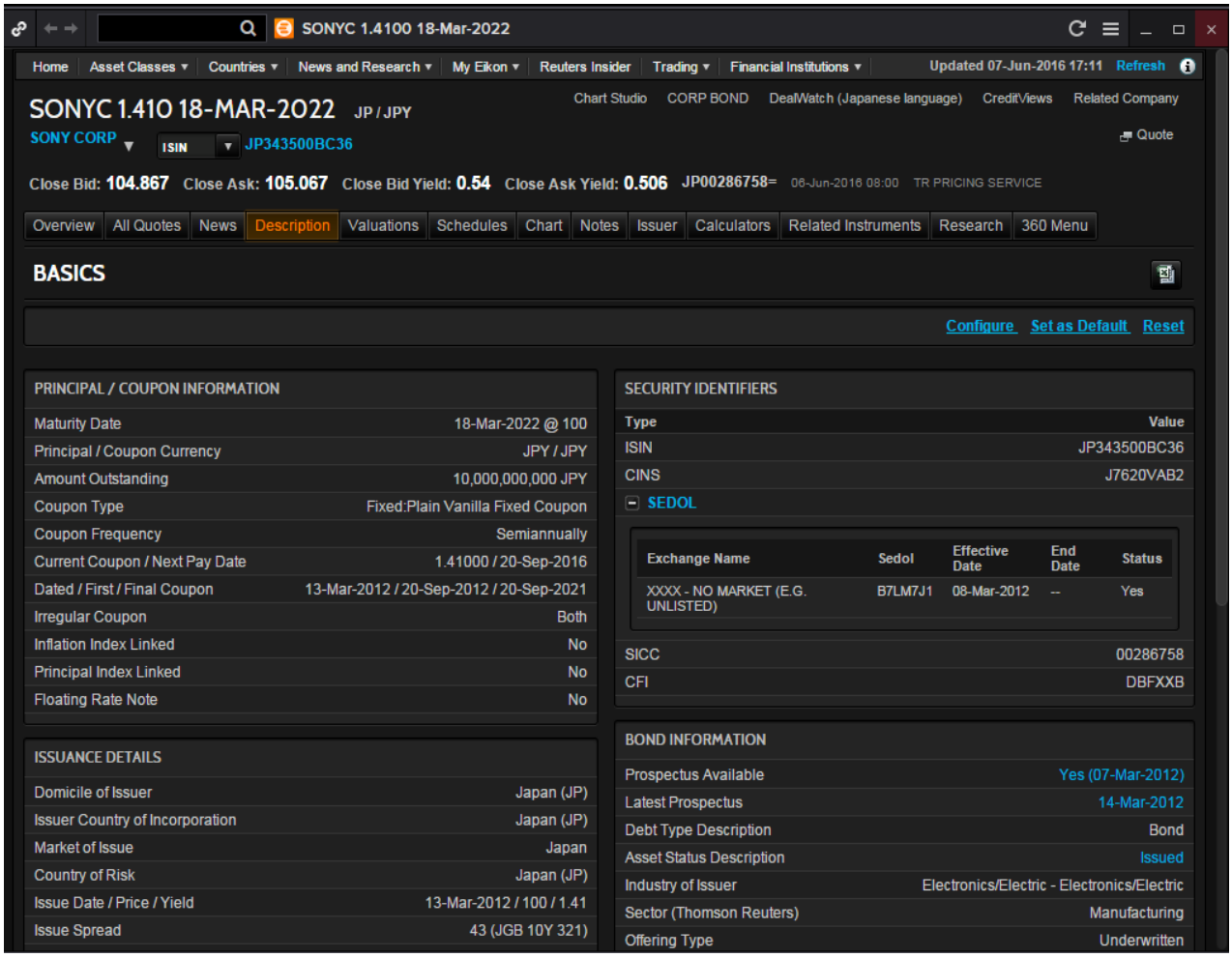
On this page, one can monitor and research on the different CDS issued by different companies as well as monitor a list of new issues. This would enable the user to have a better understanding about the overall credit of the bond market.

4. Bond Search

There is a certain market convention adopted when searching for a bond. Usually, we should search:

TICKER COUPON MATURITY

For example, below is an example of a bond page obtained by searching **<SONY 1.410 2022>**



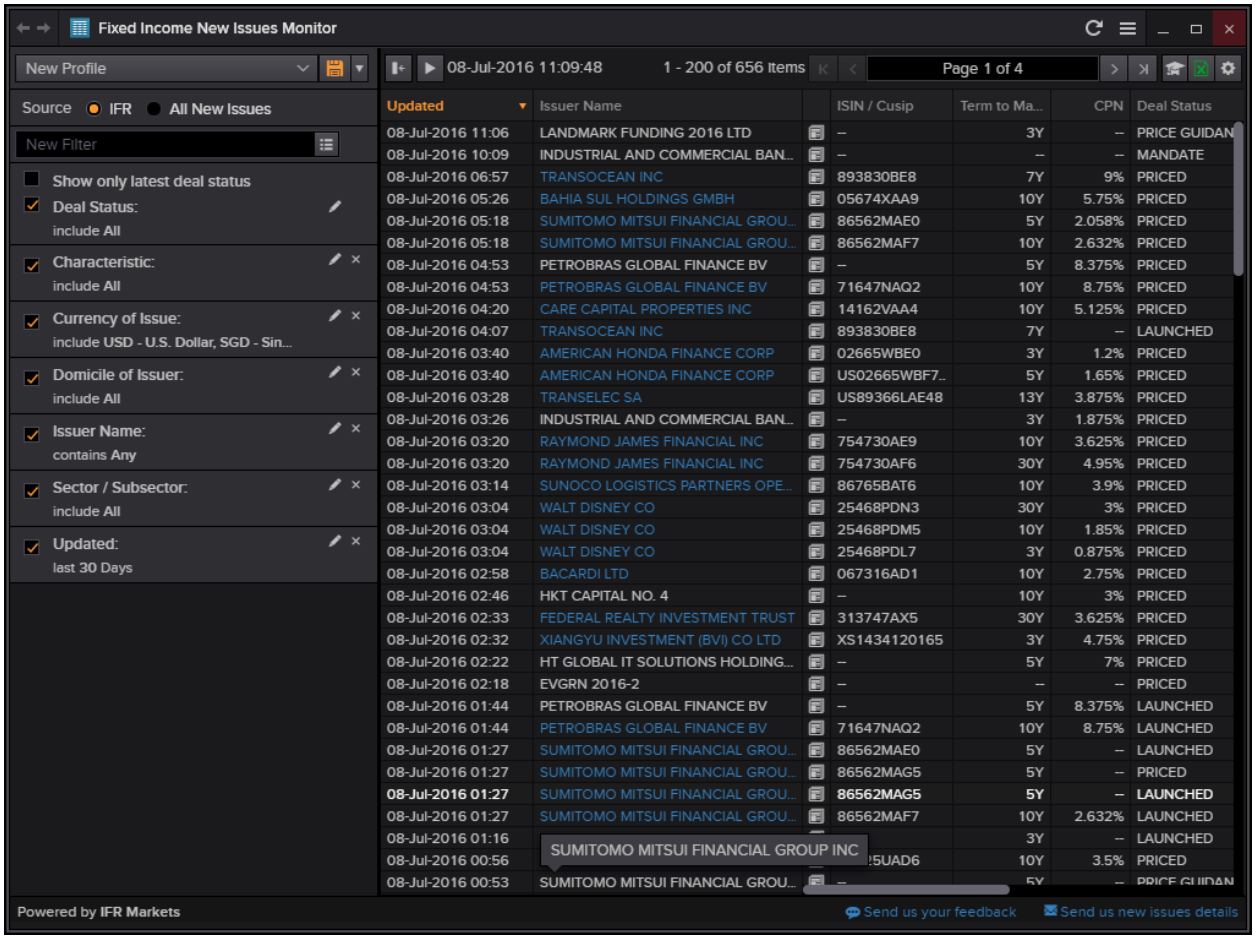
Alternatively, you could search for the ISIN code of the bond if you know the exact figures.

5. Fixed Income New Issues Monitor <FINIM>

One page that many users will refer to is the Fixed Income New Issues Monitor. On this page, different new issues generated from the IFR Market News will be consolidated.

New issues at the rumour phrase will be consolidated and news will be reported through the road show till the time of pricing.

In the Eikon Toolbar, search **<FINIM>**



In the page, you are able to adjust the following information about the issues.

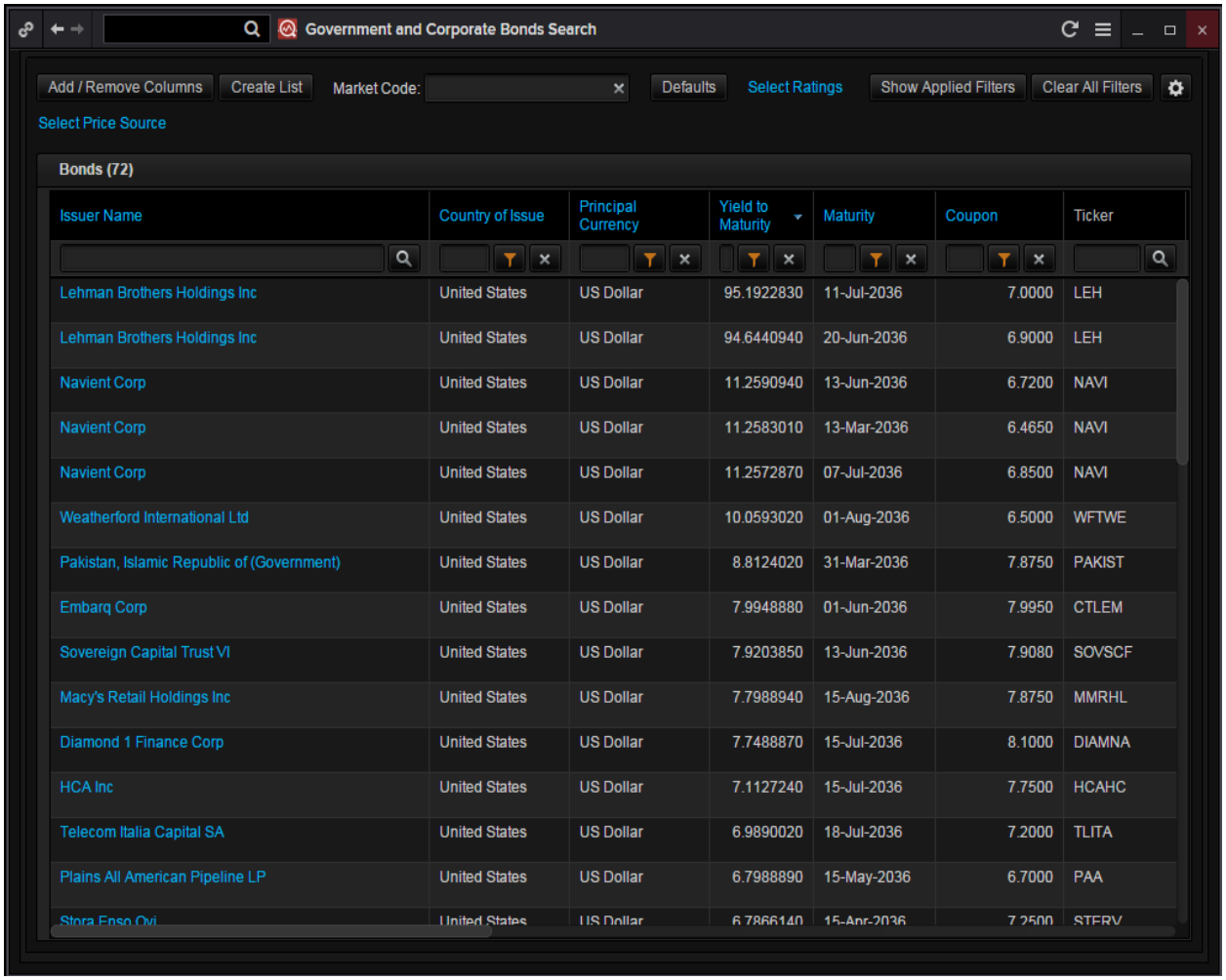
1. Deal Status
2. Characteristic
3. Currency of Issue
4. Domicile of Issuer
5. Issuer Name
6. Sector or Subsector
7. Whether it has been updated in the past x days (e.g. 30 days)

Also, users who are looking at all new issues (not limited to the IFR page) can select “All New Issues” for all different types of issues available in the system.

6. Bond Screener <GOVSRCH>

Thomson Reuters has a Bond Screener Application which can be used to screen Government and Corporate Bond issues.

In the Eikon Toolbar, search **<GOVSRCH>** or Government and Corporate Bonds in order to obtain the following screen,



Pressing the Add / Remove Columns button would allow users to specify the different type of criteria they would like to use when screening the bonds.

Next, using the button, users can adjust the filters

Also, clicking on the titles of each column would sort the list according to the highest to lowest value, or the lowest to highest value, whichever is preferred.

Double-clicking on the names of the issuers in blue would reveal more information about the individual bonds, by linking the user to the description page of the bond.

7. Bond Valuation

Pricing of a Bond

The price of a newly issued Bond can be calculated by discounting its future cashflows to the present using the appropriate interest rates. Such cashflows include the coupon payments attached to the bond issue (if any) and the final principal repayment.

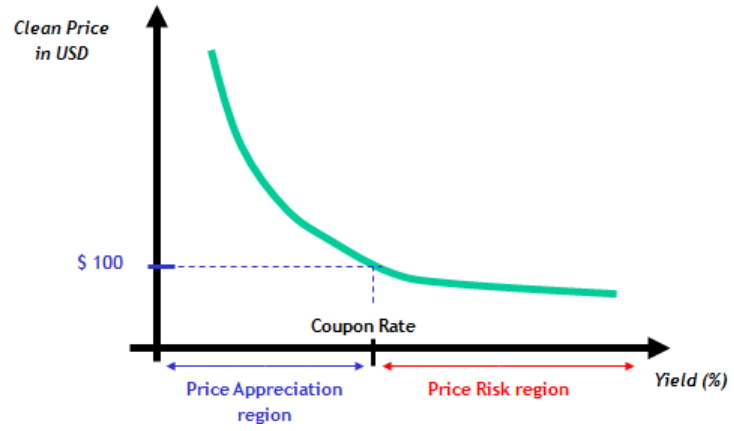
The discount factor could be calculated from a zero-coupon curve. An example is presented below.

$$\$101.3017 = \frac{\$5}{(1+4.2729\%)^1} + \frac{\$5}{(1+4.4497\%)^2} + \frac{\$(5+100)}{(1+4.5332\%)^3}$$

The **Yield to Maturity** of the bond is a cash-weighted average of the different discount factors. When the clean price of a bond decreases, there is a parallel shift of the zero curves upwards, where holders will have enjoy higher yield to maturities to compensate them for the potential loss in price of the bond.

Price Risk

One should understand the concept of **price risk** when considering bonds. Assuming an investor purchases a bond at par ($100). When the YTM increases, which is higher than the coupon rate, the bond will be selling at a discount (less than $100), the investor will experience an unrealised capital loss.

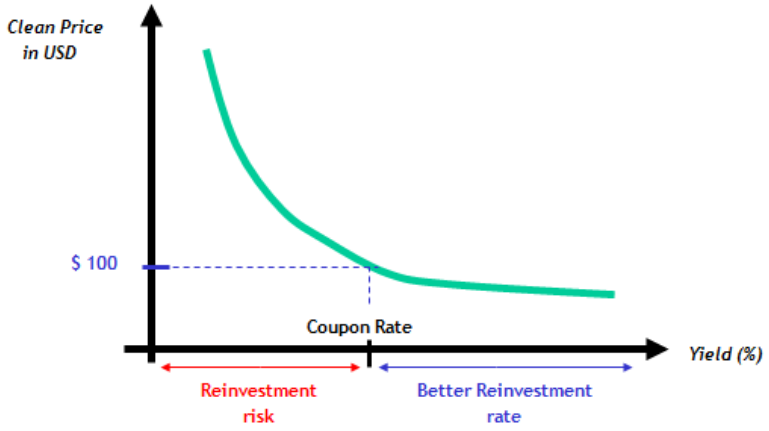


Hence, when the YTM is higher than the coupon, it is in a price risk region and when the YTM is lower than the coupon, the bond is in the price appreciation region.

Reinvestment Risk

Reinvestment Risk is the risk that the proceeds from the payment of principal and coupons have to be reinvested at a lower rate than the original investment. Assume an investor purchases a bond at par ($100) or YTM = Coupon Rate.

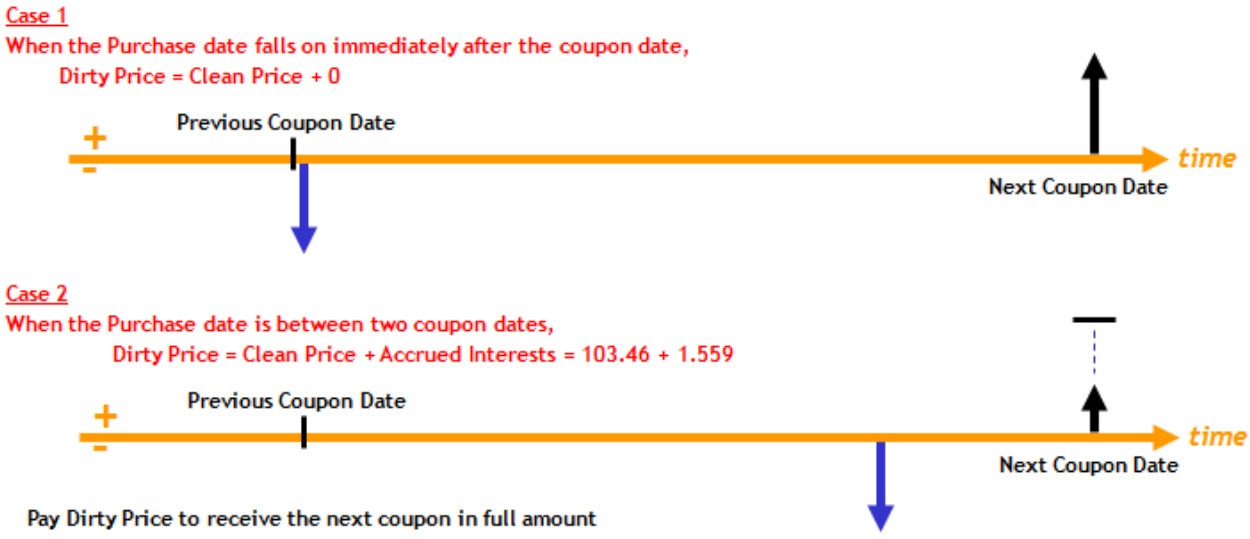
When the YTM decreases lower than the coupon rate, the investor cannot reinvest the coupon dollars received at the Coupon Rate. This is hence a reinvestment risk.



Hence the point in the centre represents the yield at which there is no reinvestment and price risk.

Dirty Price and Clean Price

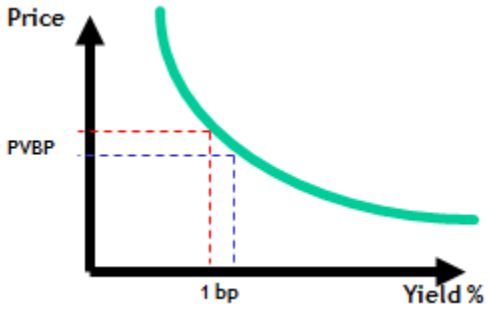
Dirty Price = Clean Price + Accrued Interest



In Case 2, the holder is required to pay the dirty price which includes the accrued interest amount in order to compensate the previous holder for the forgone interest at the next coupon date.

Sensitivity Analysis: Present Value of 1 Basis Point

The present value of 1 basis points (PVBP) measures the actual change in price for 1 basis point (bp) change in yield. This change PVBP is often multiplied by the notional amount in order to find the notional change in price for a 1bp shift in yield. This is also known as the dollar value of an 01. (DV01)



Sensitivity Analysis: Duration

Duration, Macaulay's Duration in years, is the weighted average life, or average maturity of a bond. This could be viewed as the weighted average number of years an investor must maintain a position in the bond until the present value of the bond's cash flows is equal to the bond price paid.

Some investors have suggested that measuring risk using duration is preferable to using historical returns to measure risk since the standard deviation approach requires numerous variances and covariances to be calculate to estimate portfolio risks. Furthermore, these estimates are based on historical data and in the rare occasion these data are present, the changing nature of bonds makes the appropriateness of these measures questionable. Hence, duration may be a better measure of risk.

Duration measures the sensitivity of bond values to the changes in interest rates. However, as an estimate that lacks convexity adjustments and plays by assumptions of parallel shifts in the yield curve it is far from a perfect measure.

Despite this, duration is a simpler measure to use when compared to standard deviation.

Sensitivity Analysis: Modified Duration

Modified Duration which is related to the price-yield slope measures the percentage change in dirty price per change in yield.

Sensitivity Analysis: Convexity

Convexity on the other hand, measures the percentage change in modified duration per change in yield. Hence, convexity measures the curvature of the price/yield curve.

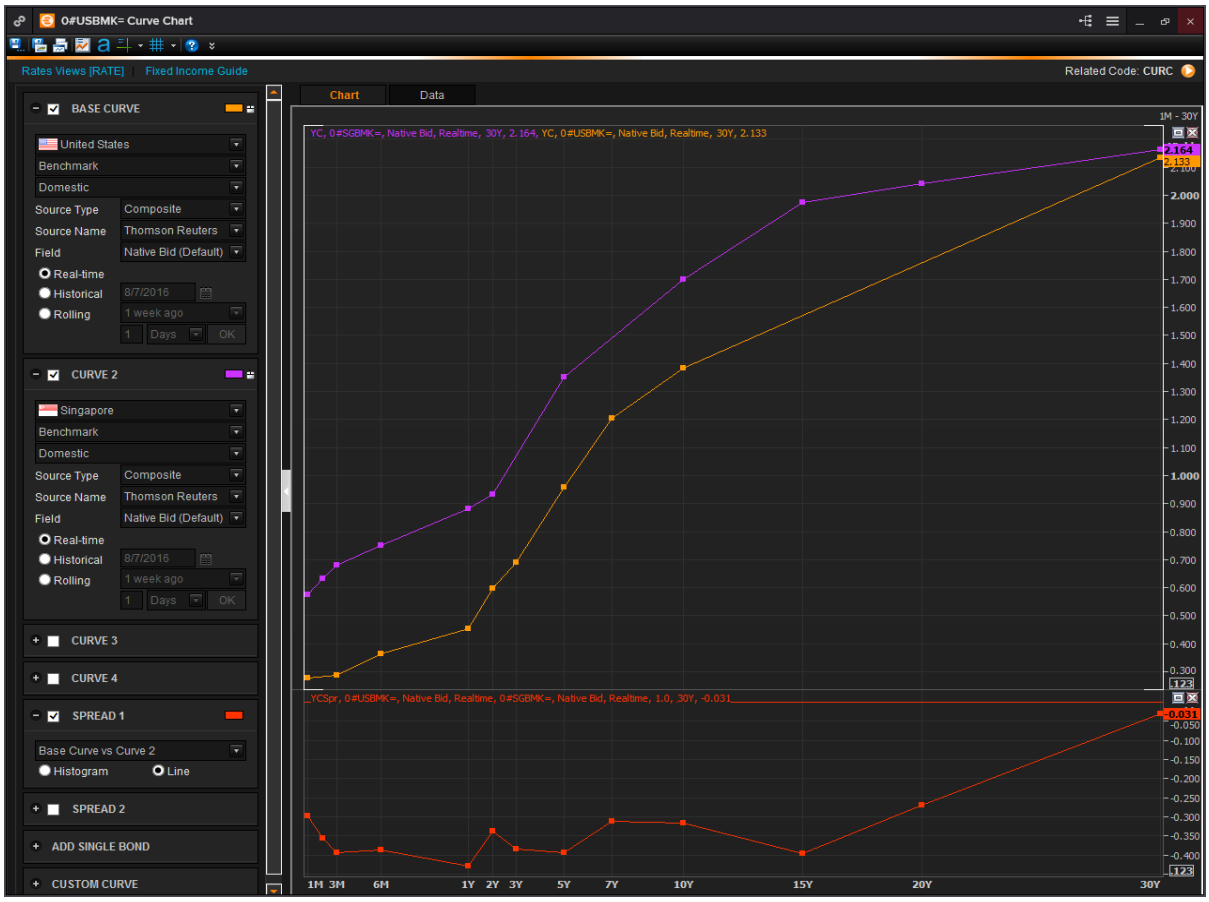
8. Charting for Bonds

Curve Chart <CURC>

Curve Chart brings together the common yield curve tasks, provides easy access to common curves and displays them from the available brokers and price contributors.

The application allows users to

1. View historical curves whenever possible
2. View and compare a large number of different yield curves from any country
3. Compare curves and their spread
4. Compare a single bond to the curves
5. Add and remove bonds



In the Eikon Toolbar, search **<CURC>** to open the application

1. Select the Country, Curve Type, Source Type, Source Name and Field
2. Add additional curves setting up the parameters the same way you set the parameters for the base Curve
3. Add spreads to compare the curves
4. Chart a single bond to compare it against the curves

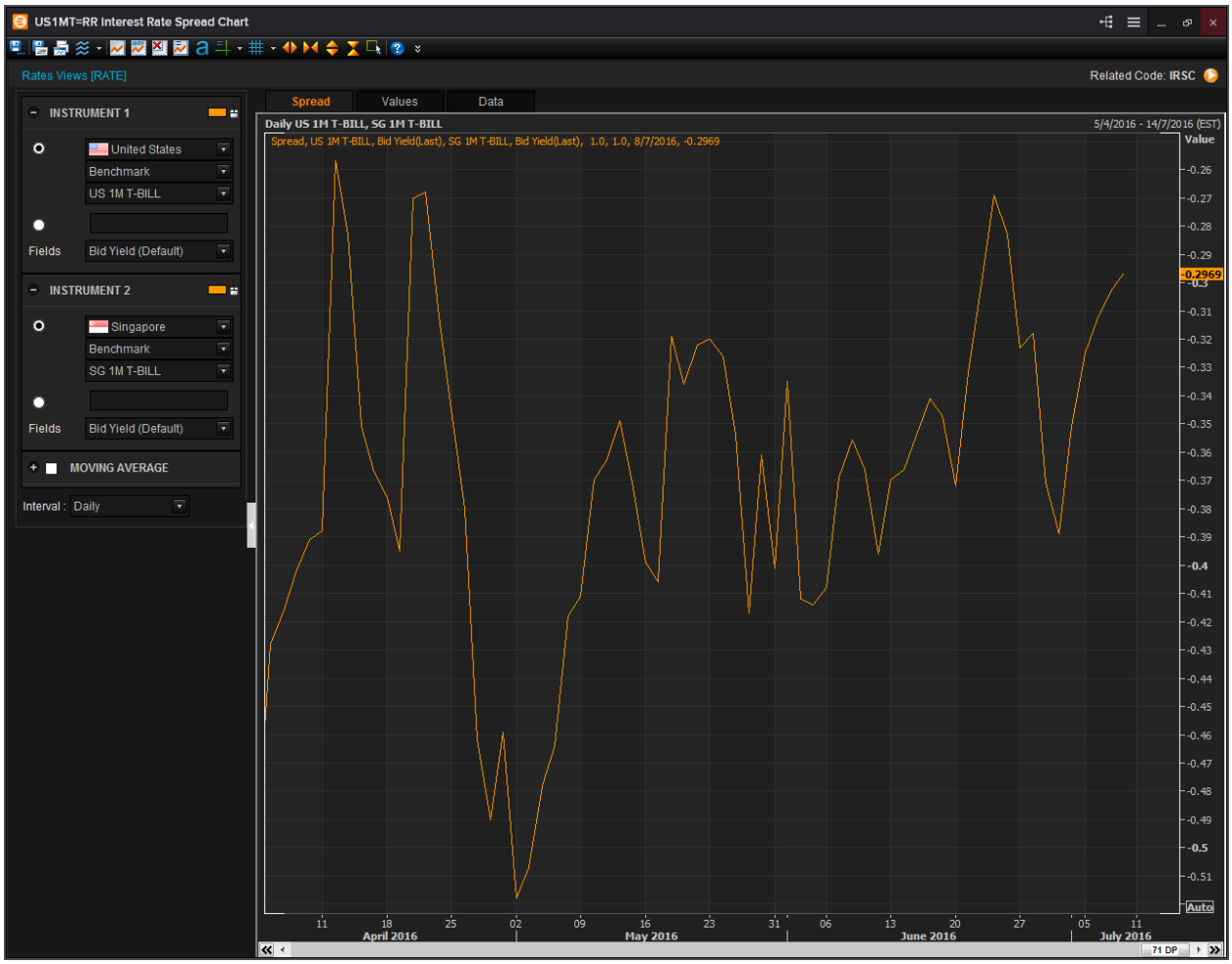
The typical shape of the yield curve is upward so the yields increase for the bonds of higher maturities. The longer the maturity the higher is the risk of investing in the bond, hence there are higher premiums associated with the bond.

Interest Rate Spread Chart <IRSC>

The Interest Rate Spread Chart **<IRSC>** shows the difference in yields between two instruments. The application allows users to

- Browse instruments by selecting a country and a type of instrument
- View the spread between yields of two instruments
- Views the yields of individual instruments
- View tabular data and copy it is MS Excel
- View Statistics, like a moving average.

Here, traders can observe the spread between yields of different instruments and look for high and low values, basing on the assumption that there are temporary and the spread will reverse to mean over time.



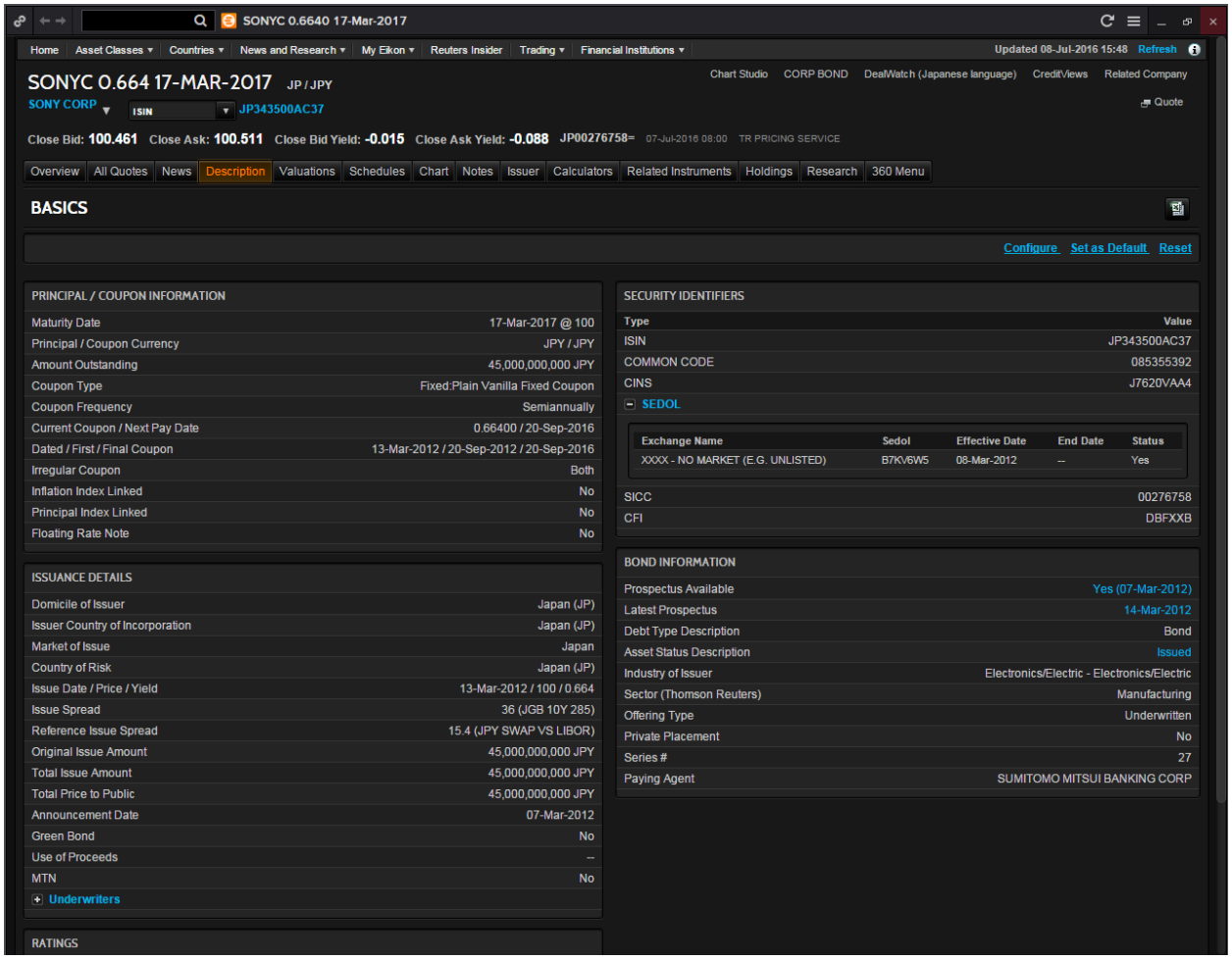
In the Eikon Toolbar, search **<IRSC>** to open the application:

1. Select or enter the RIC for Instrument 1 and 2
2. Select Statistics and define from how many periods it should be calculated
3. Select the interval you want to see
4. Spread between yields of two instruments on a time series would be displayed in the chart

Individual yields on a time-series can be viewed as well and tabular data, can be opened by selecting the second tab. Here, you can copy the data and send it to MS Excel if needed.

9. Bond View

Bond View is able to aggregate versatile pricing and valuation data and tools in categories.



In the Eikon Toolbar, search for the bond required (E.g. SONYC 0.664)

- Overview: cross-content page with charts, news and events
- All Quotes: able to retrieve real-time market quotes for a bond
- News: related news and Top News Headlines
- Description: contains data on the principal and coupon of the issue,
- Valuations: users can see the calculated figures for yields, spreads, convexity and duration.
- History: contains the time-series valuation data on YTM, price, yield spread, YTW, modified duration and convexity
- Issuer: Provides details on the issuer's debt structure and its ratings and CDSs.
- Calculators: gives access to the set of analytical and valuation tools available for a particular instrument
- Related instruments: allows searching of similar instruments
- Holdings: details on holdings of institutional investors
- Research: allows searching for and accessing broker research reports
- 360 Menu: provides a comprehensive list of all available tools, news, market data and features

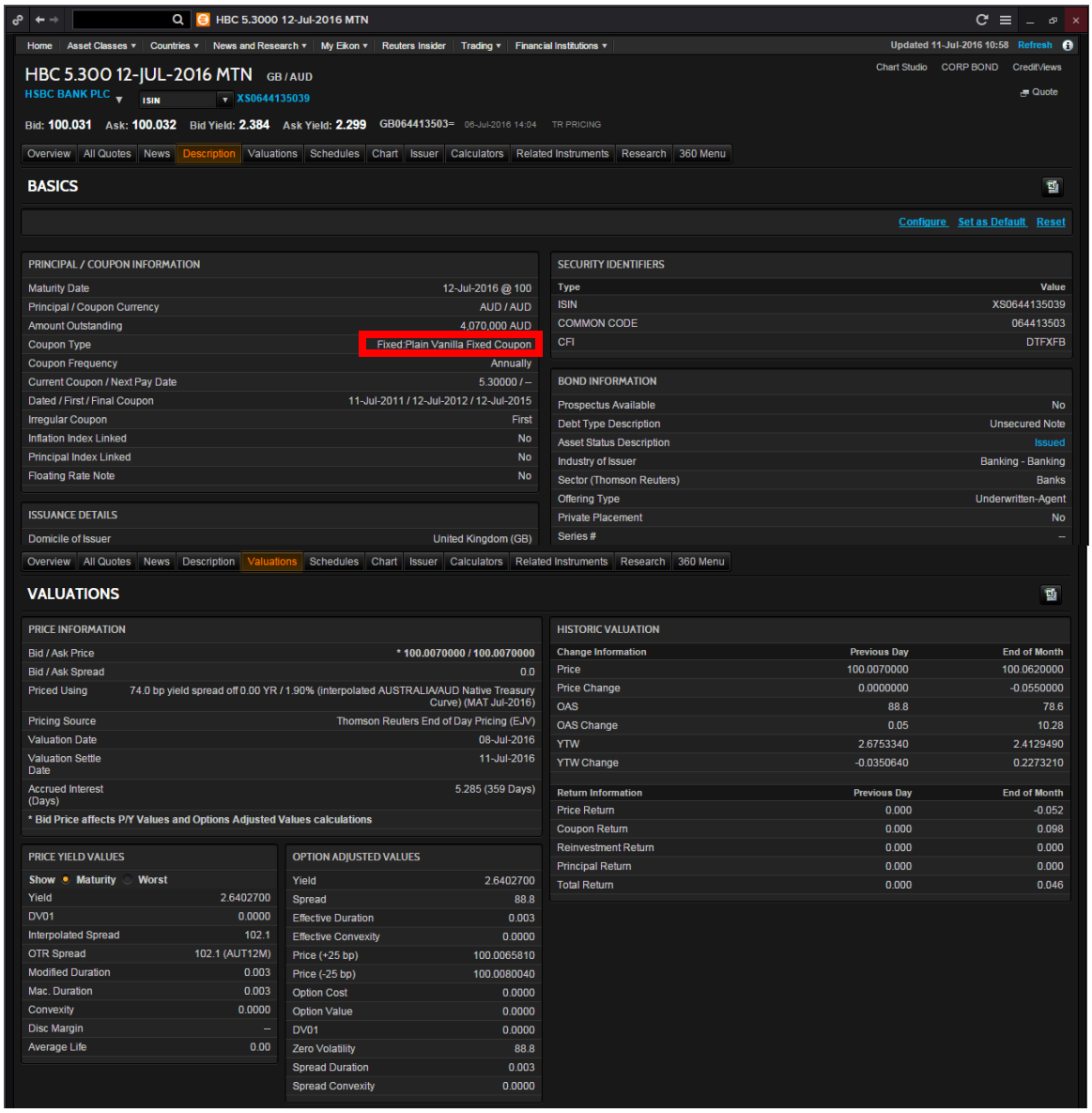
10. Fixed Rate Bonds

What is a Fixed Rate Bond?

A fixed rate bond is a bond that pays the same amount of interest for its entire term. This allows investors to know how much interest they will earn, at what frequency and for how long. As long as the issuer of the bond does not default on payment (counter-party risk), the investor can easily predict his return on investment.

One risk in investing a fixed rate bonds is interest rate risk, the risk that interest rates could rise, causing the price of the bond to fall. Conversely, if the interest rate falls, the bond would become more valuable if the investor sells it, since the market price increases when interest rates fall.

The following is a fixed rate bond paying 5.300% coupon annually due to expire on 12 Jul 2016.



The table here under valuations would present the accrued interest for the bond as well as different sensitivities of interest.

Comparison between 2 Fixed Rate Bonds

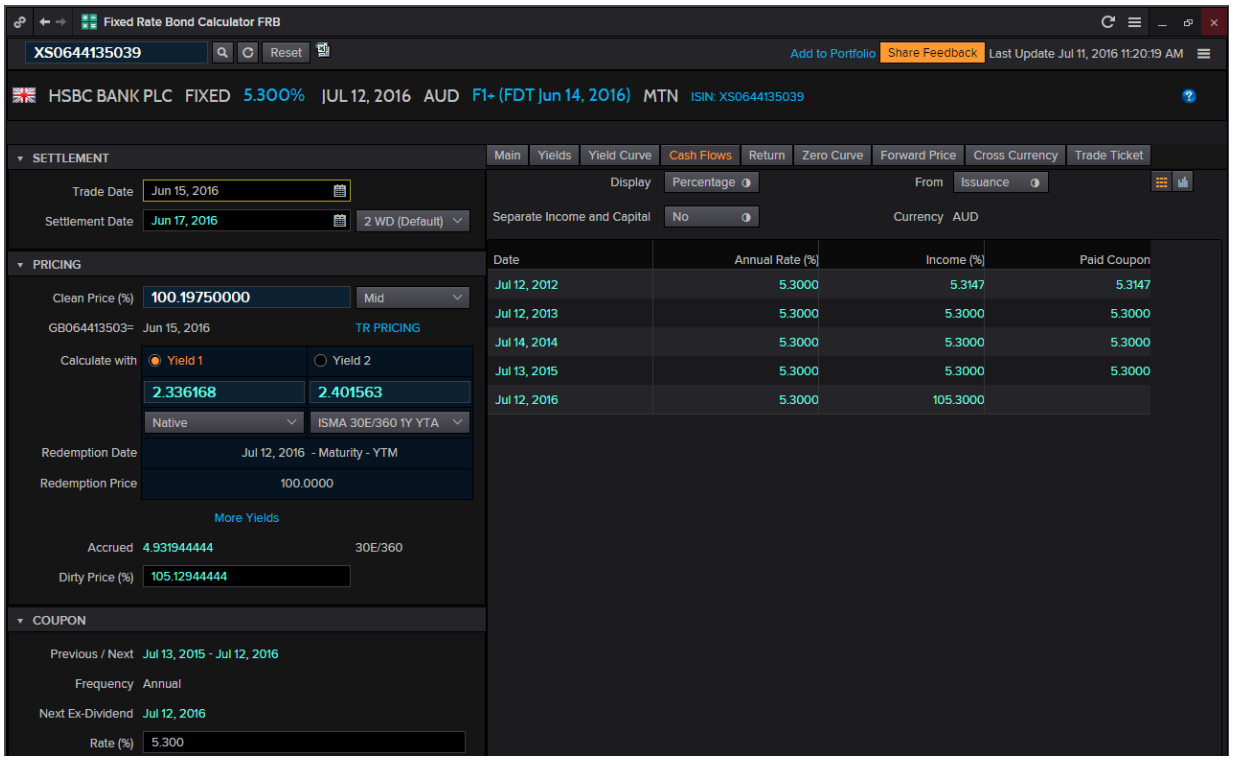
Absolute Comparison:

The **Yield to Maturity** could be utilised to compare two fixed rate bonds.

Assuming the two bonds have the same coupon rate, the differentiating factor in bond selection would be the Yield to Maturity, which is dependent on the price of the bond and the future cashflows.

Hence, a bond with the same coupon rate but offering a higher yield to maturity would imply that the price currently being quoted in the market or the final principal payment is higher the other bond.

Therefore, a higher yield to maturity bond would be a better investment than another bond with the same coupon rate but lower yield to maturity, everything else kept constant.



As there are different ways to calculate the yield to maturity, depending on the days required (360, 365 or actual) as well as different market conventions, one can make use of the Bond Calculator application **<BNDC>** in order to find the different yields to maturity.

1. In the Eikon Toolbar, search for <**BNDC**>
2. In the In-app search bar, search for the bond needed through the ticker coupon maturity convention or the ISIN Code of the bond
3. In the Yield tab, you could search for the different yield types. The native option would display the most common convention for the specific bond
4. The Cashflow tab would display the cashflow payments for the entire life of the bond.

Relative Comparison

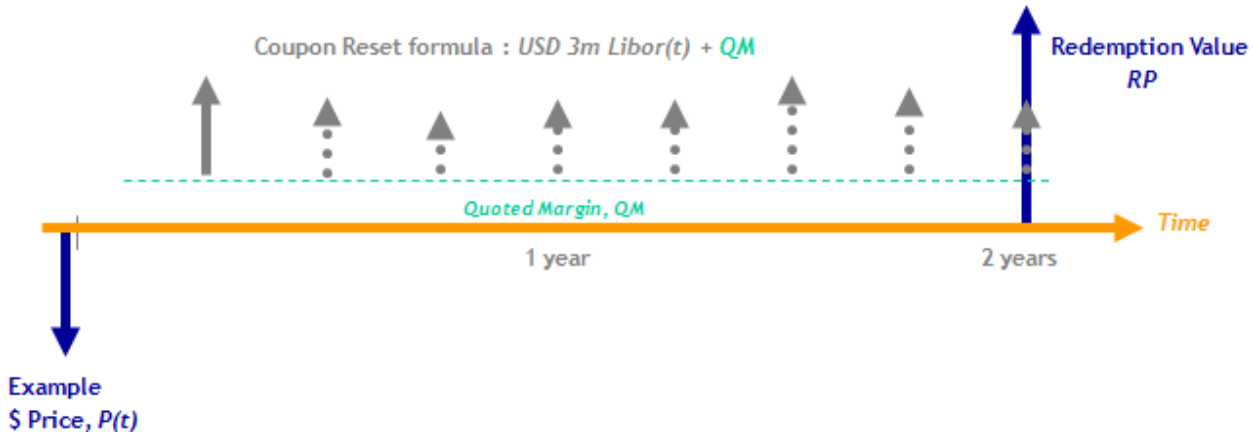
Alternatively, you could compare these yields relative to the benchmark, through the use of a Z-spread and the zero volatility spread (relative to the zero coupon curve).

11. Floating Rate Bonds

What is a Floating Rate Bond?

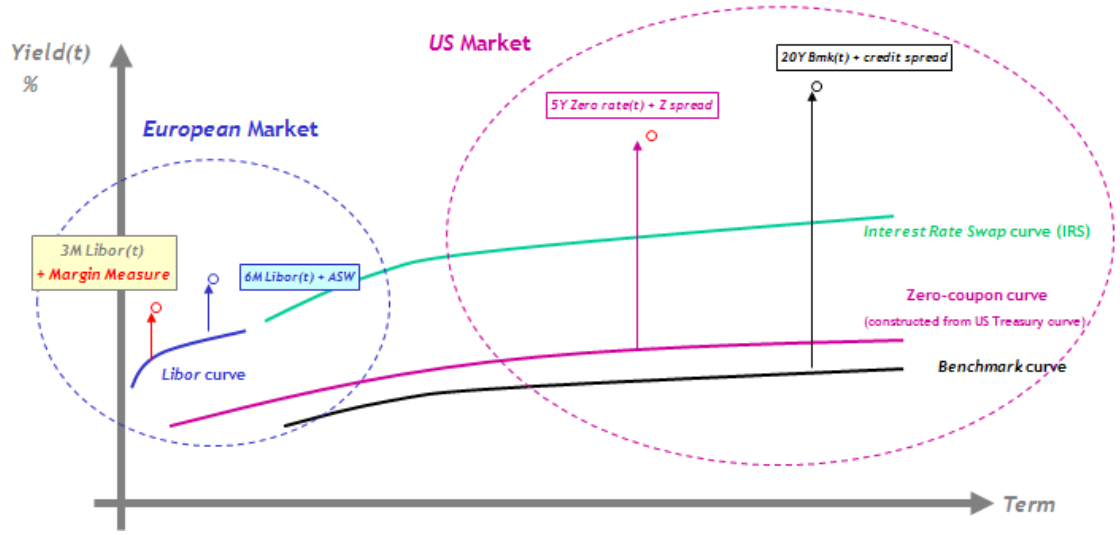
A floating rate bond, or floating rate note (FRNs) are bonds that have a variable coupon, equal to a money market reference index rate, such as *LIBOR* or *T Bills* or the *Federal Funds Rate*, plus a spread which is known as the *Quoted Margin*, QM.

Governments may issue *FRNs* for funding purposes or to establish benchmark rates.



There are two margin measures commonly used for the Euro-FRN market – the **Simple Margin and Discounted Margin**. These margin measures estimates the average spread over the reference index rate that the investor can expect to earn over the life of the security. Also, in Europe, investors tend to view FRNs as close substitutes for other money market instruments.

In the USD FRN market, the Yield to maturity spread (YTM Spread) is commonly used, based on bond yield calculation. Here, investors tend to treat FRNs as an alternative to conventional bond market instruments.



Note that a strong demand for an asset swap (to surrender fixed for float) may indicate a strong demand for FRNs.

Comparison between 2 Floating Rate Bonds

Simple Margin

The basic simple margin is the average cash return per year of the FRN compared with its index rate. When a FRN is selling at premium or discount to Par, a potential buyer f a FRN will consider the premium or discount as an additional source of dollar return. Note that the formula is as follows.

SM = [(Redemption Price – Clean Price)/Time to Maturity in years + Quoted Margin]/ Clean Price

Note that Clean price is normalised in the unit of 1 instead of 100 or 1000.

Drawbacks of the Simple Margin

1. The SM Formula does not take into consideration the current yield effect on the price of the FRN since coupon payments received on the FRN are given the same weight if the price is above or below Par
2. The discount/premium of the bond is amortised to Par in a straight line over the life of the FRN, rather than discount at a constantly compounded rate.

Hence, we need another Margin measure: the Discounted Margin

Discounted Margin

In the discounted margin, all future cash flows are discounted back to a present value at the appropriate rate. Using this method, we have to 'fix' all the future LIBORs on the note and this is to set all future LIBORs at the current market rate for an interest rate swap.

The discount margin gives a more accurate valuation of the note's effective yield spread over the index, but unless the yield curve is very steep the pricing differences between the two methods of . Whichever method you use:

If the note trades at par:	Discount margin = LIBOR spread
If the note trades at a discount to par:	Discount margin > LIBOR spread
If the note trades at a premium to par:	Discount margin < LIBOR spread[1]

Yield to Maturity Spread

The last type of margin is the yield to maturity spread commonly used in the US. The yield to maturity spread of an FRN is the difference between the yield to maturity of the FRN and the yield to maturity of the index rate.

$$YTM_{spread} = YTM_{FRN} - YTM_{index}$$

When the bond yield spread changes, it could be in tandem, or separately from one another. When spreads widen, it implies that the yield difference between the two bonds is increasing, and that one sector could be performing better than another. When compared to the historical trend, the yield spreads between different maturities of Treasuries could imply how different investors view the past and current economic conditions.

[1] http://94.101.144.194/MagellanDemoStatic/tp/c10002/cc_0_82_0_0_2_10002_u11820_33_2.htm

12. Callable Bonds

What is a Callable Bond?

Many bonds have embedded option features such as callable and puttable bonds.

A callable bond is a bond that can be redeemed by the issuer prior to its maturity. For example, interest rates might have fallen since the issue of the bond, hence the company may look to refinance this liability at a lower rate of interest. Hence they may call these bond issues and reissue them at lower coupons.

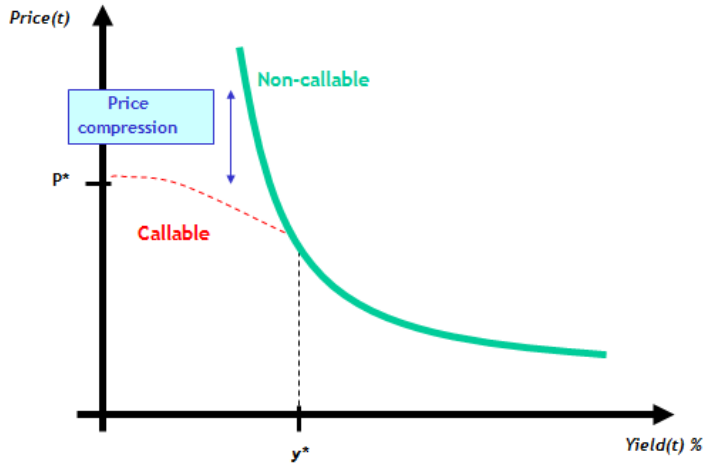
Thus, when these yields fall and the issuer calls back the bond, the investor faces reinvestment risk and this risk is compensated by higher potential yield.

Features of a Callable Bond

Yield-to-call: This calculates the yield of the bond assuming its expected cashflows are coupon payments to the first call date plus the call price.

Yield-to-worst: This calculates the yield-to-call for all call dates and from here, picks the lowest YTC value.

Both features work under the assumption that the cashflows will be reinvested and that the issue will be called on the call date.



Price compression shows that for callable bonds, when the yields decline, there is limited price appreciation. Also, callable bonds experience **negative convexity,** where when yields fall, the duration of the bond increases in magnitude.

Components of a Callable Bond

Callable Bond Price = Straight Bond Price - Call option premium on Bond

Here, there is a higher yield experienced due to the option premium received. As yield decline, the value of call option increases, leading to price compression.

The straight bond price represents the price of a non-callable bond and the call option premium is the premium of the call option calculated using the interest rate option model.

Comparison between 2 Callable Bonds

Absolute Comparison

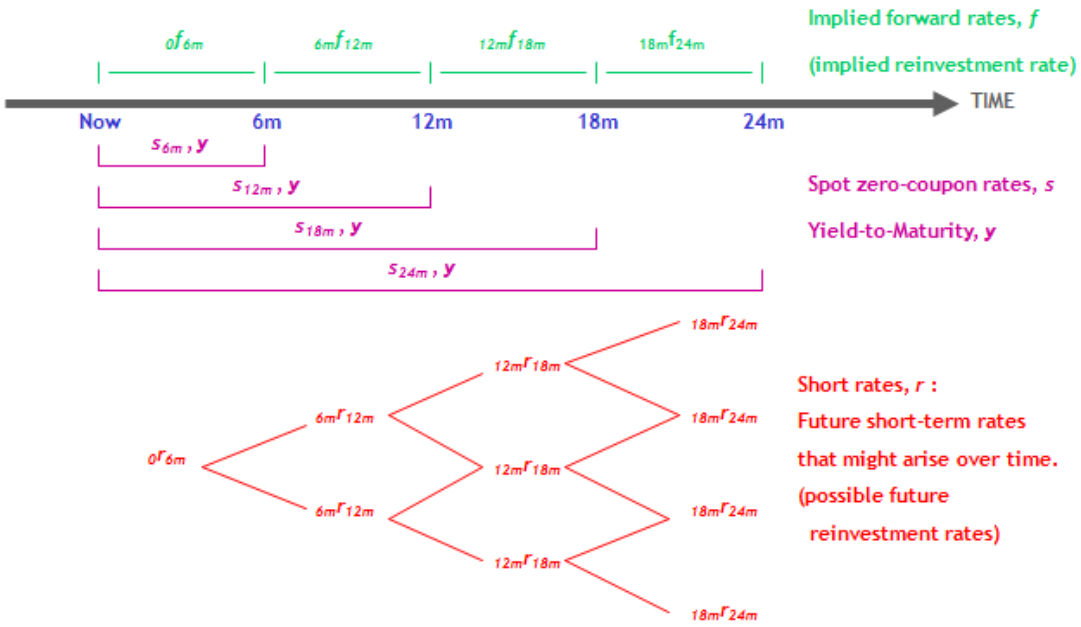
In order to conduct an absolute (figure) comparison for option-embedded bonds, we could use the Yield-to-Worst for callable bonds and Yield-to-Best for Puttable bonds.

Alternatively, option-adjusted yield from synthetic option-free bond price implied by both callable bond price and known bond option premiums could be utilised.

Relative Comparison

Option-adjusted spreads is the measurement of the spread of a fixed=income security rate and the risk-free rate of return, usually the treasury rate.

OAS are the spread over the short rates, future short-term rates that might arise over time, for which the Net Present Value of the cash flows is equal to the bond price. OAS takes account of yield volatility as volatility affects cashflows of bonds with embedded options.



The volatility term structure affects how wide *r* varies

The OAS is calculated using the binomial interest rate tree. The theoretical value is equal to the market price (spot) when the constant spread is added to all the *short rates*, r in the tree. This constant spread is the option adjusted spread, OAS.

A higher OAS spread is likely to imply a higher risk which would translate to a higher return for the holder.

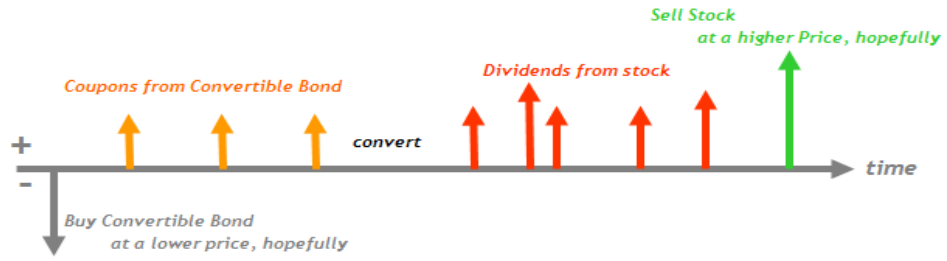
Note the difference between the two spreads:

1. Z Spread: spread over the zero-coupon curve for a corporate bond with no options to achieve NPV = Non Callable Bond
2. Option Adjusted Spread: spread over all possible paths of reinvestment rates for a corporate bond embedded with options to achieve NPV = Callable Bond.

13. Convertible Bonds

What is a Convertible Bond?

Convertible bond holders can exchange the security for common stock at the holder's option in accordance with terms set forth in the bond indenture. These common stocks do not have to be the stock of the issuer and may be denominated in a different currency. Convertible bond issues hence offer bond holders with the opportunity for capital gain opportunities should the share price of the converted equity increase in later on.



Why issue convertible bonds?

Users may choose to issue convertibles since these bonds often have lower interest costs and less restrictive covenants. Through these instruments, companies can sell common stock at a better price. When the equity market is down, there could be little demand in equity, making it difficult to raise capital via equity issuance and thus issuing convertible bonds could be beneficial to the company instead.

Why invest in convertible bonds?

On the other hand, investors may choose to purchase convertible bonds because they can buy convertible bonds when the equity market is down. When the equity market is up, they can then sell the bond (at a high conversion value) or convert to equity and hold. However, if the equity market is consistently down, they can hold the convertible bond and enjoy coupon interests instead.

Terminology

1. **Conversion Ratio** = Par of security / Conversion Price
   This directly specifies the number of shares that can be obtained by surrendering convertibles.
2. **Market Conversion Price** = Market price of convertible / Conversion Ratio
   This shows the cost per share if obtained through the convertibles.
3. **Parity Value = Conversion Ratio * Share Price**
   This is the minimum potential value of a convertible as equity.
4. **Parity or Parity Ratio = Parity Value / Par of security**
   Intrinsic value of the option of conversion. When this value is > 100%, then the option of conversion is in the money.
5. **Market Conversion Premium = (Market price of convertible - Conversion value)/Conversion value**
   This is the difference between the market price of convertible & its parity value.
6. **Breakeven = Market Conversion Premium/ (Coupon rate - Dividend Yield)**
7. **Bond Floor** is the value at which a non-convertible with the same credit quality would be traded at. This acts as a "lower bound" as share price falls.

Comparison between 2 Convertible Bonds

Comparing between different convertible bonds is slightly more complicated than others as one should evaluate them both as bonds and as derivatives of common stock. Both components add value to convertible bonds.

1. Convertible Value

The price that the user pays for a convertible bond divided by the conversion ratio is the “conversion price” of the underlying shares. For example, a bond selling for $1060 that converts into 10 shares of the common stock. This gives it a conversion price of $106 per share. If the shares are currently trading at $90 each, the conversion value of the bond is $900.

Hence, 2 different bonds can be compared using their convertible value as to see which one has a higher value compared to its price.

2. Conversion Premium (gives an idea of moneyness in optionality)

The price of a convertible bond is higher than that of its non-convertible twin -- a “straight” bond -- because the option to convert provides value to the bondholder. Users can calculate the value of a straight bond using a financial calculator and entering the bond's principal, interest payments and interest rate. For example, the straight version of the $1,060 convertible bond might sell for $800. The conversion premium is the difference between the current bond price and the greater of the conversion value or straight bond value. In the example, the $900 conversion value exceeds the straight bond value of $800. Therefore, the conversion premium is $1,060 minus $900, or $160.

3. Bond Analysis via “Overpaying ratio”

If users put the conversion premium on a percentage basis, they can analyze the bond by comparing its premium percentage with those of similar bonds.

Do this by dividing the premium by the conversion value. In the example, this is $160 divided by $900, or about 18 percent. This is the percentage users “overpay” to obtain the conversion option.

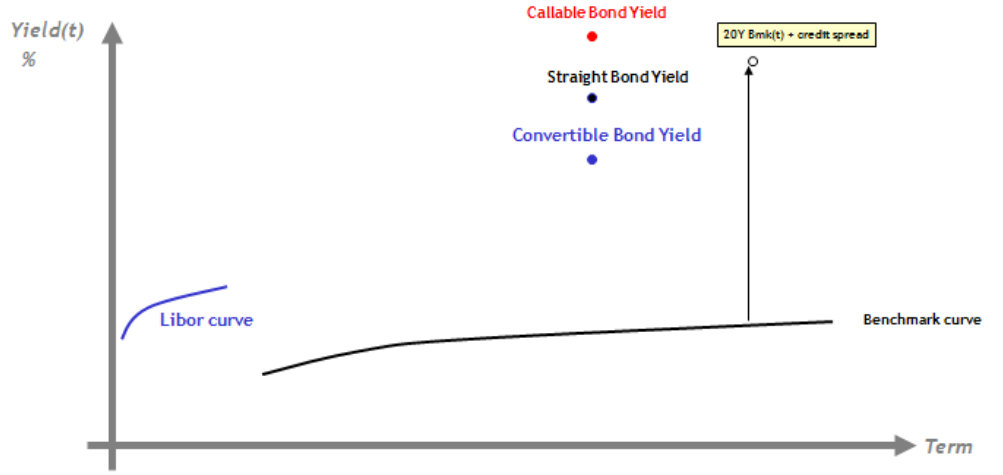
4. Bond Analysis via “Break-even price” analysis

Another way of interpreting the conversion premium percentage is the amount the stock price has to rise before reaching the break-even point between the bond value and the conversion value. In this example, the break-even price, or “parity,” is $106 per share.

As the stock price rises above parity -- creating a negative premium -- it pulls the convertible bond price higher.

Users would therefore make the same profit by selling the bond as users would by converting it and immediately selling the underlying shares.

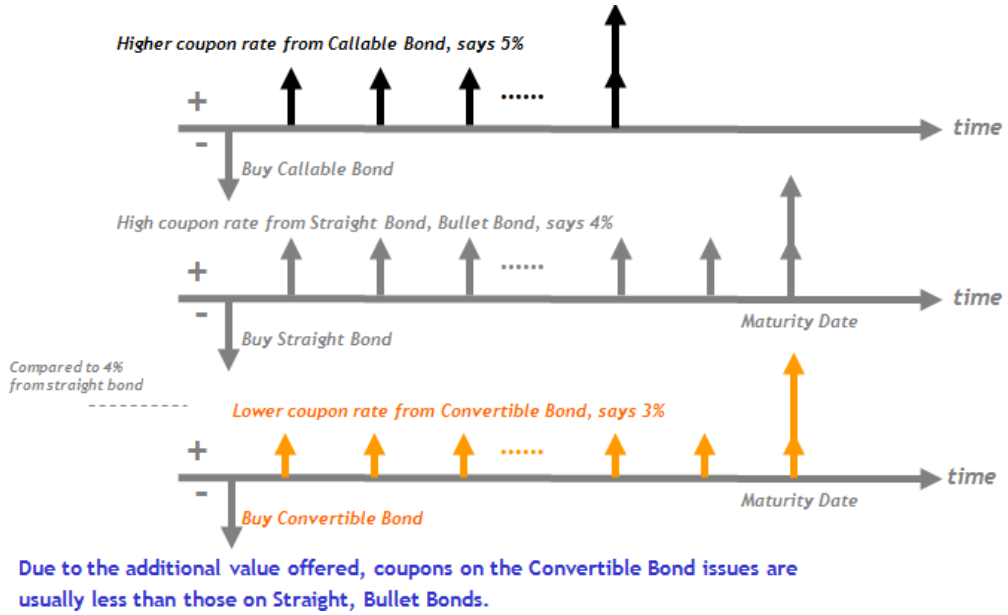
14. Comparison between Different Bond Types



One can conduct a simple comparison between a fixed rate bond, callable bond and convertible bond of same tenor and issuer.

If the price of a fixed rate bond is P,

1. **Price of callable bond = P - Premium of option on its fixed rate bond,**
   Thus the yield of callable bond > yield of its fixed rate bond
2. **Price of convertible bond = P + Premium of option on its equity,**
   Thus yield of convertible bond < yield of its fixed rate bond



Thus, whether users select a fixed, floating, convertible or callable bond would ultimately depend on their specific financing needs. However, callable bonds typically have the highest rate, followed by fixed and convertible with the lowest.

15. Fixed Income Portfolio Analytics <FIPA>

An application which would prove useful for users wanting to analyse the specifics of their portfolio would be the Fixed Income Portfolio Analytics Application **<FIPA>**.

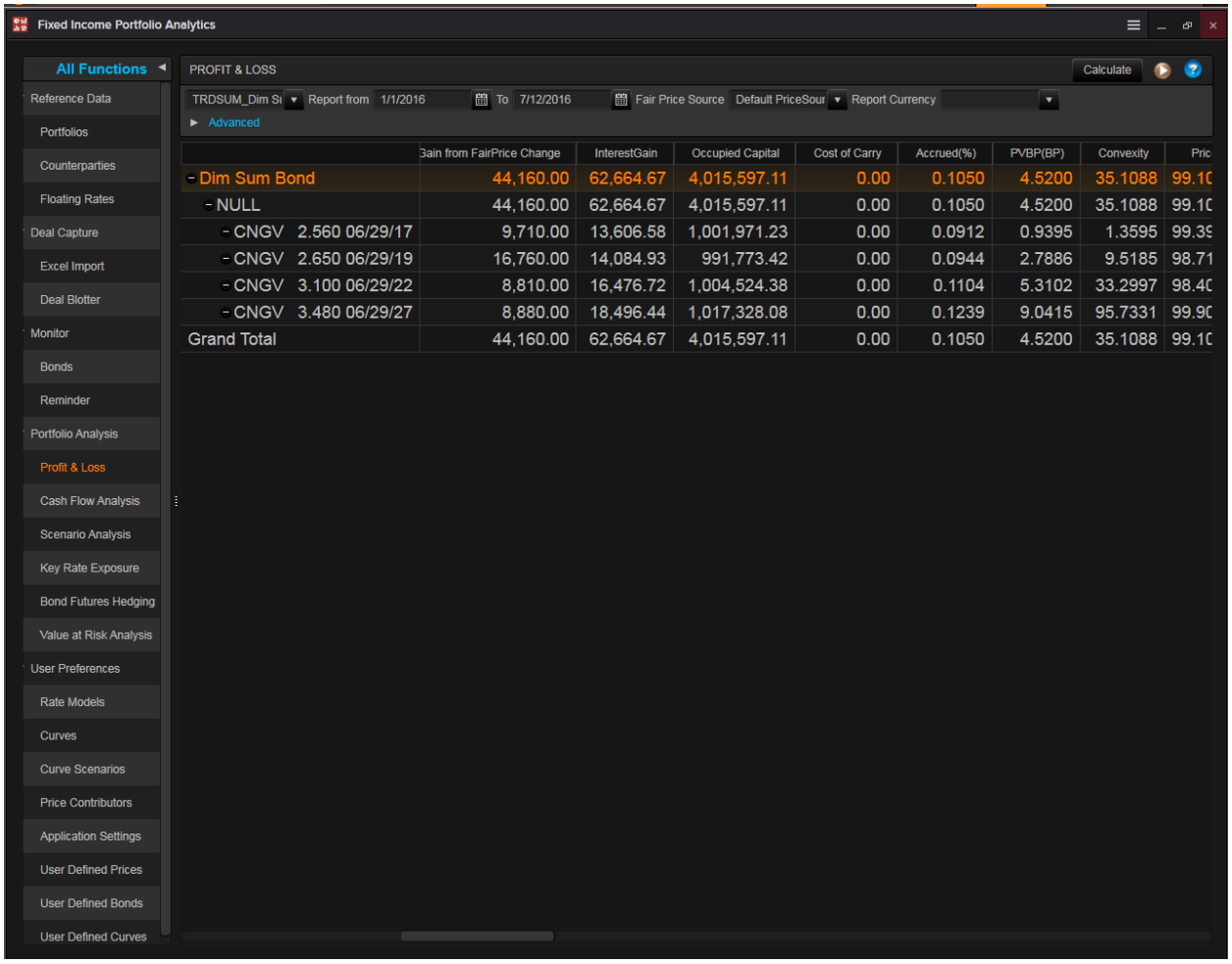
On this page, users can check of their reference data, monitor different bond portfolios as well as conduct different types of analyses such as Profit & Loss analysis, Cash Flow Analyses, Scenario Analyses etc.

We have presented two examples below of the profit & loss and the scenario analyses.

1. In the Eikon Toolbar, enter **<FIPA>**
2. Select a pre-determined portfolio or manually enter the data
   Reference Data > Portfolios > New > New Portfolio
3. From the left side bar, select the type of feature you would like to search.

E.g. Profit and Loss

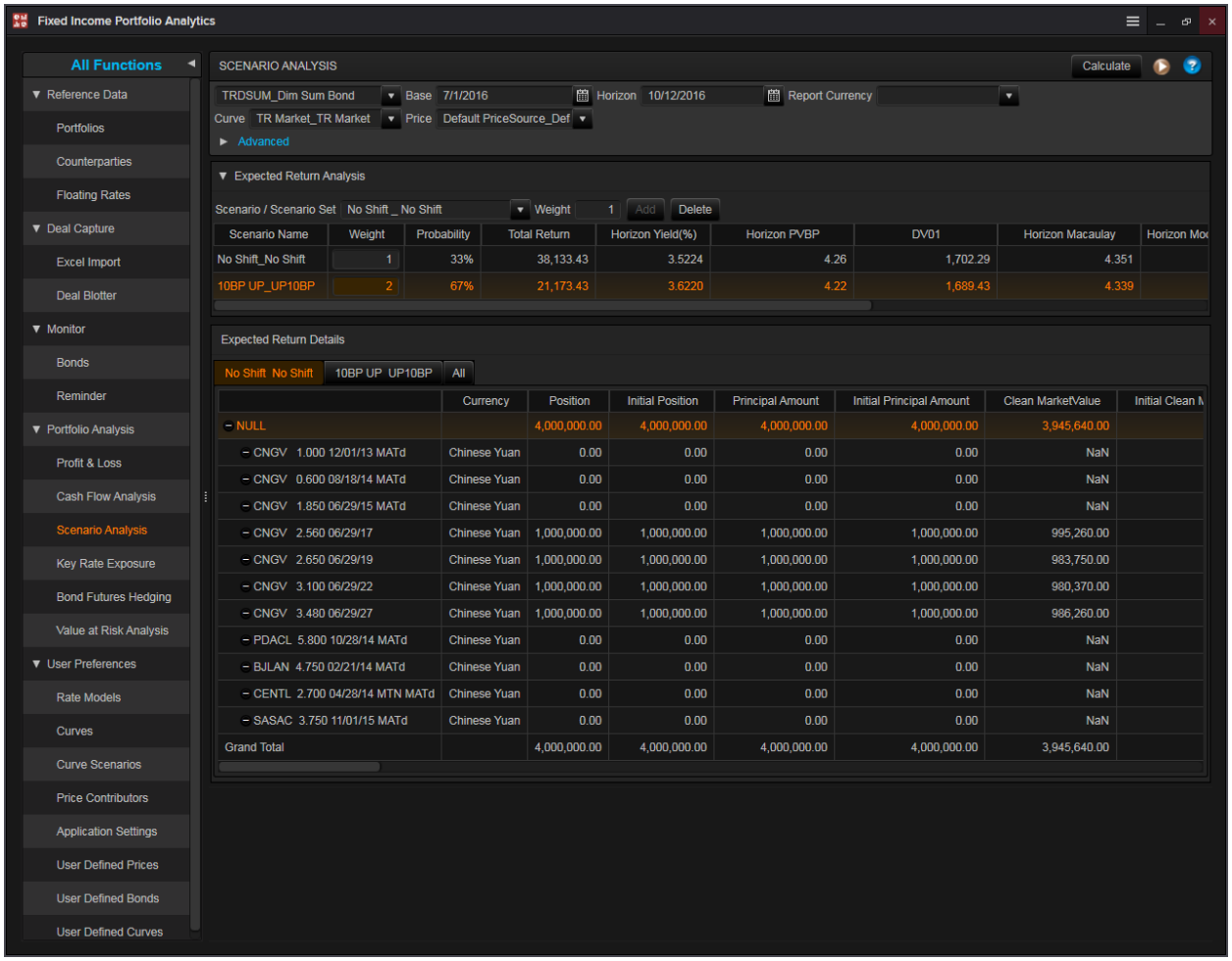
On this page, select the portfolio from the drop down list and select the timeframe needed. Finally press enter for the page below to appear.



Secondly, you could conduct scenario analysis on this page.

After entering the FIPA application page, do the following.

1. In the left column, select **"Scenario Analysis"**
2. Select the portfolio necessary and select the different scenario/scenario sets (e.g. 10BP UP_ UP 10B)
3. After choosing the different scenarios, select the weight you would like to issue to each scenario
4. Press "Calculate" and the calculator would select the total return for each scenario and show you a detailed breakdown below.
5. The Total Return, Horizon Yield, PVBP, DV01, Macaulay Duration and Modified Duration etc will be provided.

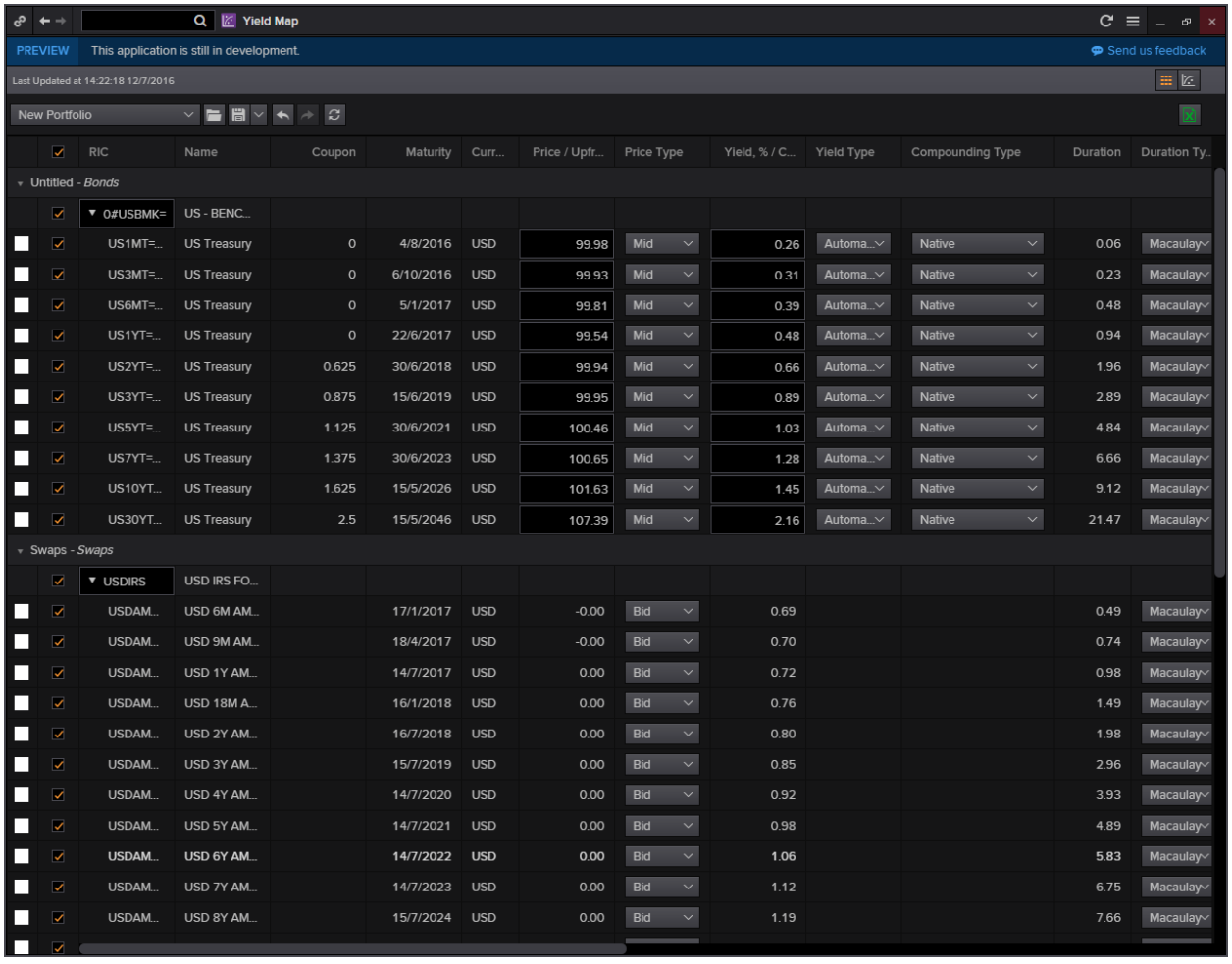


16. Yield Map <YMAP>

For users who wishes to have a more visual representation of the page could utilise the Yield Map application **<YMAP>** in order to plot the different yields of bonds and swaps in order to view them visually on one page.

We will walk through the functionalities of the application.

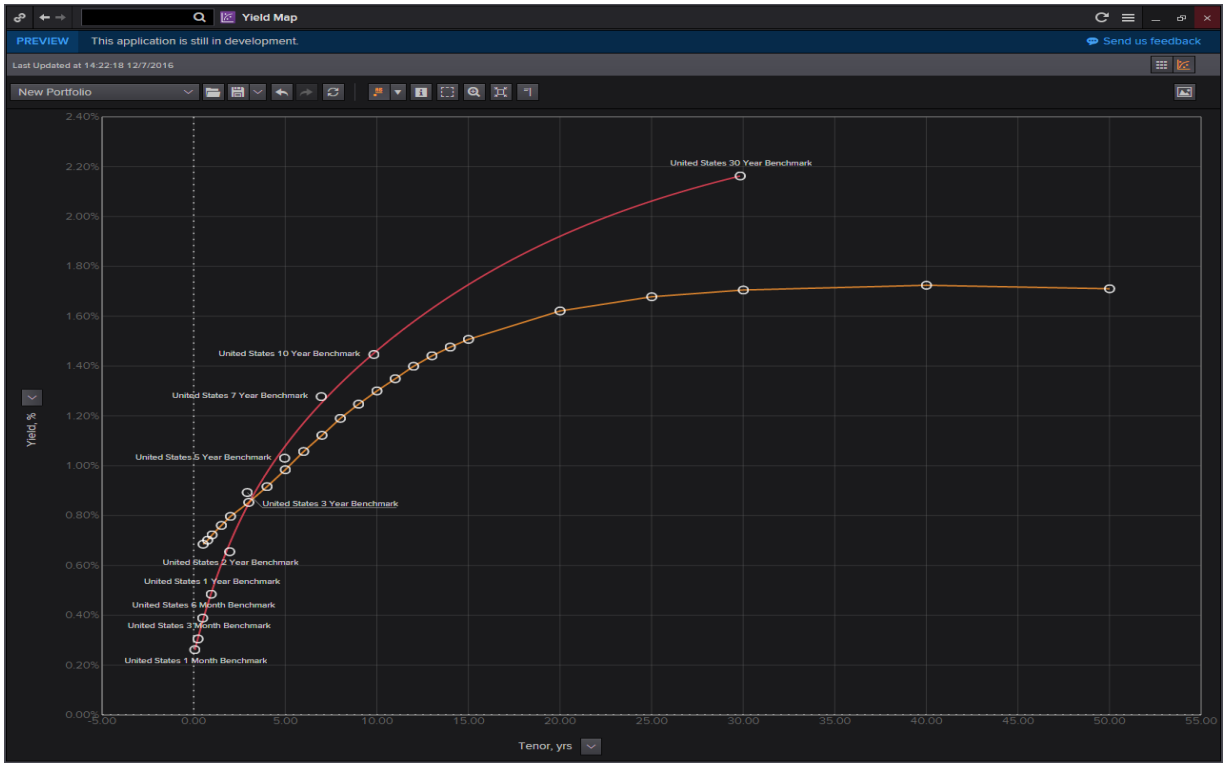
1. In the Eikon Toolbar, search **<YMAP>** in order to open the application.
2. Select Add New Portfolio > Create Empty Table if no Portfolio is available. Alternatively, you could import or drag and drop the lists if any.
3. If you selected Create Empty Table, you could search for Chain Code of the Bond or select individual instruments (e.g. 0#USBMK=)



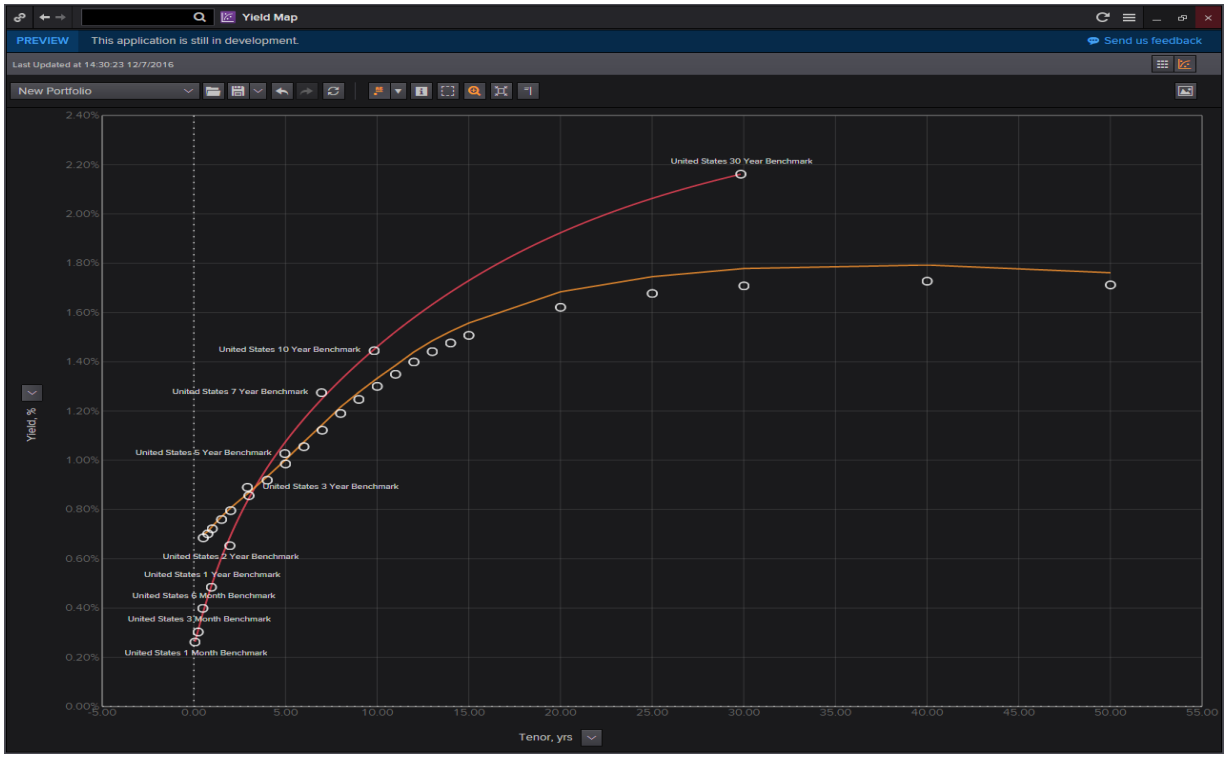
RIC	Name	Coupon	Maturity	Curr...	Price / Upfr...	Price Type	Yield, % / C...	Yield Type	Compounding Type	Duration	Duration Ty...
Untitled - *Bonds*											
0#USBMK=	US - BENC...										
US1MT=...	US Treasury	0	4/8/2016	USD	99.98	Mid	0.26	Automa...	Native	0.06	Macaulay
US3MT=...	US Treasury	0	6/10/2016	USD	99.93	Mid	0.31	Automa...	Native	0.23	Macaulay
US6MT=...	US Treasury	0	5/1/2017	USD	99.81	Mid	0.39	Automa...	Native	0.48	Macaulay
US1YT=...	US Treasury	0	22/6/2017	USD	99.54	Mid	0.48	Automa...	Native	0.94	Macaulay
US2YT=...	US Treasury	0.625	30/6/2018	USD	99.94	Mid	0.66	Automa...	Native	1.96	Macaulay
US3YT=...	US Treasury	0.875	15/6/2019	USD	99.95	Mid	0.89	Automa...	Native	2.89	Macaulay
US5YT=...	US Treasury	1.125	30/6/2021	USD	100.46	Mid	1.03	Automa...	Native	4.84	Macaulay
US7YT=...	US Treasury	1.375	30/6/2023	USD	100.65	Mid	1.28	Automa...	Native	6.66	Macaulay
US10YT...	US Treasury	1.625	15/5/2026	USD	101.63	Mid	1.45	Automa...	Native	9.12	Macaulay
US30YT...	US Treasury	2.5	15/5/2046	USD	107.39	Mid	2.16	Automa...	Native	21.47	Macaulay
Swaps - *Swaps*											
USDIRS	USD IRS FO...										
USDAM...	USD 6M AM...		17/1/2017	USD	-0.00	Bid	0.69			0.49	Macaulay
USDAM...	USD 9M AM...		18/4/2017	USD	-0.00	Bid	0.70			0.74	Macaulay
USDAM...	USD 1Y AM...		14/7/2017	USD	0.00	Bid	0.72			0.98	Macaulay
USDAM...	USD 18M A...		16/1/2018	USD	0.00	Bid	0.76			1.49	Macaulay
USDAM...	USD 2Y AM...		16/7/2018	USD	0.00	Bid	0.80			1.98	Macaulay
USDAM...	USD 3Y AM...		15/7/2019	USD	0.00	Bid	0.85			2.96	Macaulay
USDAM...	USD 4Y AM...		14/7/2020	USD	0.00	Bid	0.92			3.93	Macaulay
USDAM...	USD 5Y AM...		14/7/2021	USD	0.00	Bid	0.98			4.89	Macaulay
USDAM...	**USD 6Y AM...**		**14/7/2022**	**USD**	**0.00**	Bid	**1.06**			**5.83**	Macaulay
USDAM...	USD 7Y AM...		14/7/2023	USD	0.00	Bid	1.12			6.75	Macaulay
USDAM...	USD 8Y AM...		15/7/2024	USD	0.00	Bid	1.19			7.66	Macaulay

4. Right-click on any of the data items and select “Add to Curve” and choose a curve and colour.

5. Select the  button for the curve to appear as follows. This chart would show you the two yields stacked side by side by the absolute figures for the yield.

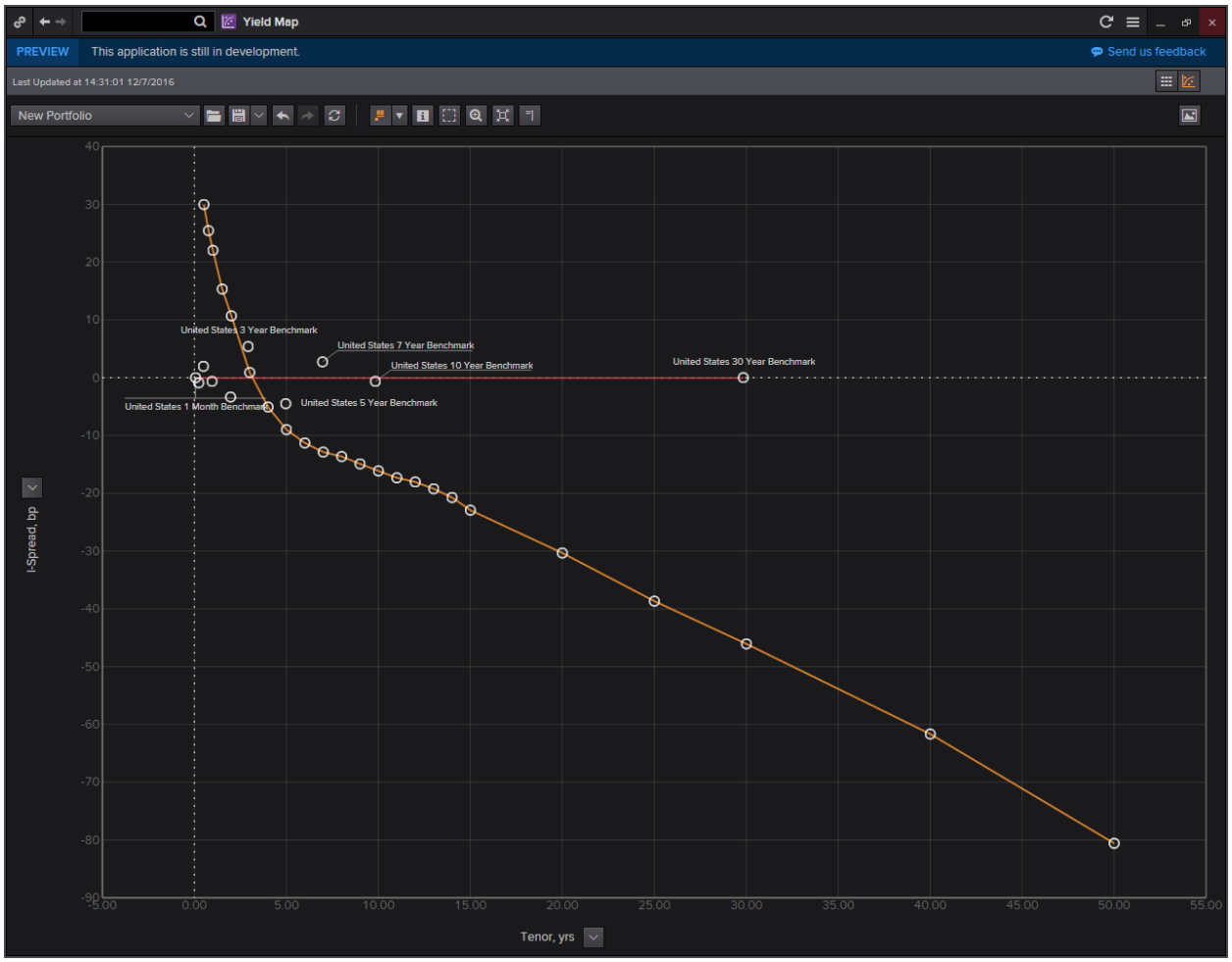


6. Right click on the curve and select **Bootstrap** in order to plot a zero curve out of the swap or bond



7. Alternatively, you could force a yield curve to zero in order to view how the other instrument performed relative to it.

Here, click on the arrow on the vertical axis and select I-spread. Following this, select the yield curve you would like to force to zero (e.g. the bond yield curve). The resultant chart as shown below would show how the second curve performed relative to the first with positive figures showing that the yield for the second curve was higher than the first and vice versa.



Part 9: Commodities and Energy

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COMMONLY USED CODES: COMMODITIES AND CURRENCIES

GLOBAL	
Euro Bond	FGBLc1
JGB	FYBc1
Long Gilt	FLGc1
3-Month EURIBOR	FEIc1

FINANCIALS – CURRENCIES	
Euro	UROc1
Japanese Yen	JYc1
Canadian Dollar	CDc1
Swiss Franc	SFc1

FINANCIALS – INTEREST RATES	
Eurodollar	ECc1
US Long Bond	USc1
US Long Bond – Electronic Trading	ZBc1
2-Year T-Note – Electronic Trading	ZTc1
5-Year T-Note – Electronic Trading	ZFc1
10-Year T-Note – Electronic Trading	ZNc1
Federal Funds	FFc1

COMPOSITE TREASURY BONDS		
On the Run	**Eikon**	**Eikon NAS**
1 Month T-Bill	US1MT=RR	US1MT=RRPS
3 Month T-Bill	US3MT=RR	US3MT=RRPS
6 Month T-Bill	US6MT-RR	US6MT-RRPS
1 Year Note	US1YT=RR	US1YT=RRPS
2 Year Note	US2YT=RR	US2YT=RRPS
3 Year Note	US3YT=RR	US3YT=RRPS
5 Year Note	US5YT=RR	US5YT=RRPS
10 Year Note	US10YT=RR	US10YT=RRPS
30 Year Note	US30YT=RR	US30YT=RRPS

VEHICLE RETRIEVAL – RULES OF THUMB	
Vehicle	**Format**
Class Stock	Lower case (ab)
Preffered Stock	_p
Rights	_r
warrants	_t
When Issued	_w
Units	_u
Exchange Specifc	.X (exch code)

CROSS CURRENCY	
Australia Dollar – US Dollar	AUD=
Canadian Dollar – US Dollar	CAD=
Euro – Japanese Yen	EURJPY=
Euro – US Dollar	EUR=
US Dollar – Swiss Franc	CHF=
US Dollar – GB Pound Sterling	GBP=
GB Pound – Euro	GBPEURO=

ENERGY	
Crude Oil, Light	CLc1
Gasoline	RBc1
Heating Oil	HOc1
Natural Gas	NGc1

METALS	
Gold	GCc1
Platinum	PLc1
Silver	SIc1
Copper	HGc1

COMMODITIES – FOOD, MEATS & MISCELLANEOUS	
Coffee C	KCc1
Cocoa	CCc1
Sugar (World)	SBc1
Orange Juice	OJc1
Cotton	CTc1
Lumber	LBc1
Live Cattle	LCc1
Live Hogs	LHc1

COMMODITIES – GRAINS & OILSEEDS	
Corn	Cc1
Wheat	Wc1
Soybean	Sc1
Soybean Oil	BOc1
Soybean Meal	SMc1

1. Overview

Commodities are often categorized as raw or partly-refined materials, traded for processing into final goods. A very small percentage of commodities trading require physical delivery as most organizations use the exchange for hedging purposes.

There are 4 main commodities markets, namely:

1. Energy
2. Metals
3. Agriculture
4. Shipping

Commodities are either traded on an exchange or OTC, as cash or forwards and futures.

How to View Futures on Eikon

Eikon allows users to view future chain contracts as well as individual futures contracts.

1. In order to view a **future chain contract**, one can do either of the following.

A: In the Eikon Search Bar, type **<0#XXX:>** (XXX represents the code for the chain contracts)

B: In the Quote App (F4), type **<0#XXX:>** or type XXX: and press F3.

A would give you the detailed view and specifications of the contract chain, while B would provide you the prices of the chain contracts.

2. In order to view **individual contracts**, one can do A or B, replacing the search with **<XXXC1>** for the nearest live contract.

A good thing to note about futures on Eikon:

Types of Instrument	Example Code	RIC Logic
Futures Chains	0#XXX: E.g. 0#LCO:	The chain RIC shows all the live futures contracts. (0#): Indicates that it is a chain (LCO): Root Code (:): Indicates a futures chain
Individual Futures Contract	E.g. LCOZ5	The individual contract consists of the root code, the month and year of expiry. (LCO): Root Code (Z): December (5): Year 2015
Continuation RIC	E.g. LCOC1	This will show the contract closes to expiry. Once this contract expires, it will automatically roll over to display the next live contract
Expired Futures	LCOZ1^3	(LCO): Root Code (Z): December (3): Year in the decade, 2013 (^): indicates an expired future (1): Decade. For example, here it is 10.

Spread Trading

Commodities, especially energy products, may sometimes be trade on spreads. Common spread contracts show the following,

- The difference between 2 related products

- The difference between two different delivery months of the same futures chain.

Type of Instrument	Example Code	RIC Logic
Spread Chain	0#LCO-:	(-): Indicates calendar spread contracts. Hence, the spread between different delivery months
Individual Spread Contracts	LCOV5-V6	The spread between the September 2015 and the December 2016 contracts
Crack Spread	0#1HO-CL	The difference between two different types of energy products. In this case, the crack spread between heating oil and crude oil trading on NYMEX

Crack spreads can be defined as the differential between the price of crude oil and petroleum products. Hence it involves buying crude oil, and simultaneously selling products, or vice versa. This could allow refineries to lock-in a crude oil price and heating oil and unleaded gasoline prices simultaneously in order to establish a fixed refining margin. Thus, it is a hedging tool.

Options on Futures

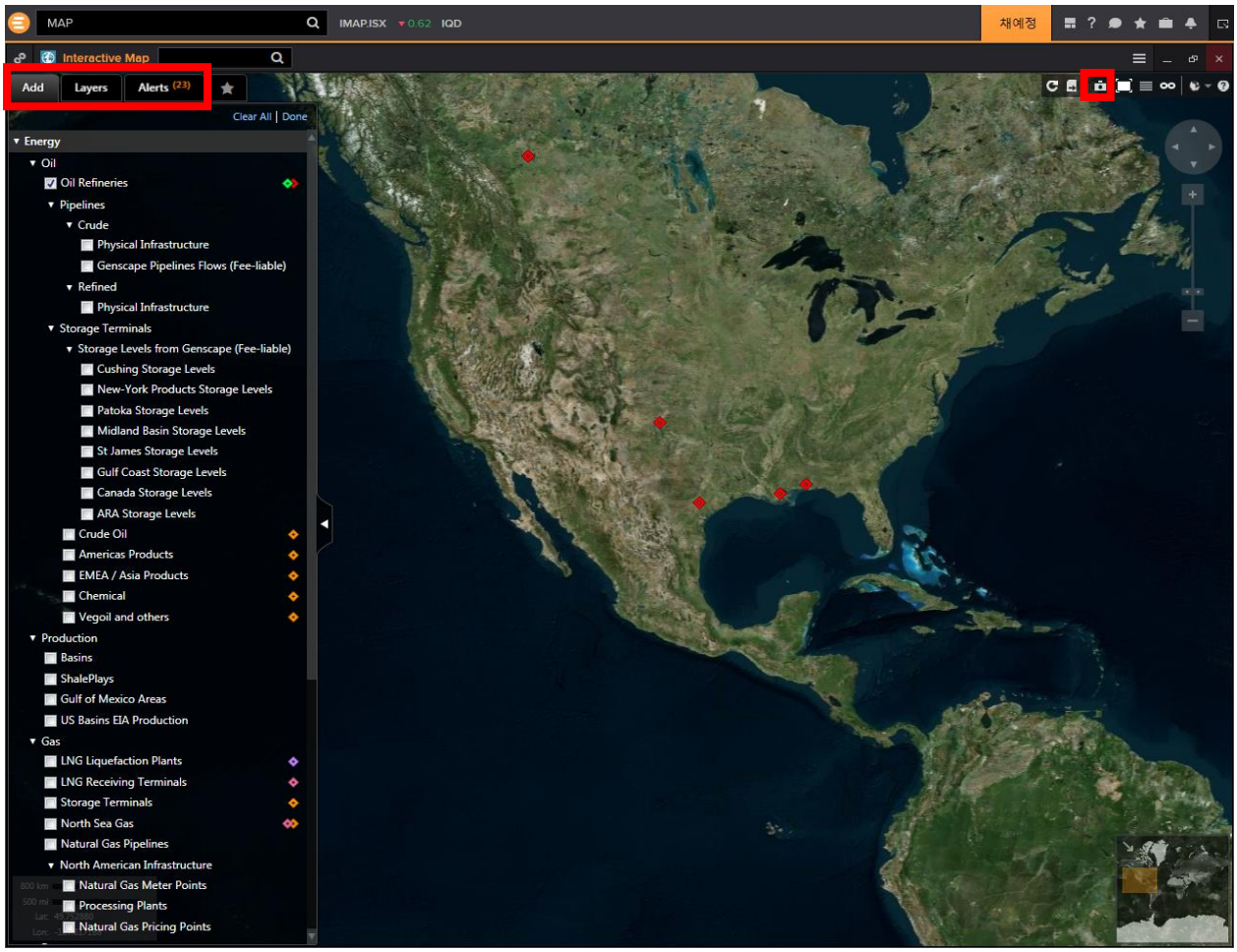
Type of Instrument	Example Code	RIC Logic
Options Chains	0#LCO+: 0#LCO++	(+): Options on futures chains all end with + ++: At the money options

OTC Instruments

Type of Instrument	Example Code	RIC Logic
OTC Commodities	0#FO-E	This is used to separate information regarding type, term, delivery method and quality. The example shows all fuel oil in Europe FO: Fuel Oil E: Europe
OTC Commodities	FO35-C-NWE	FO35: Fuel Oil with API 3.5% C: Cif (Cost Insurance and Freight). The price includes delivery as compared to FOB (Free on Board) NWE: Location North Western Europe

2. Interactive Map <MAP>

The Interactive Map function on Eikon is a good visual display of all the key factors that affect the supply chain and prices of commodities trading. On the Interactive Map Application, one can view the refineries or different production facilities, and filter out those which are closed or under construction. As shown in the screen shot below, these are the oil refineries currently which are under maintenance.



1. In the Eikon Toolbar, search **MAP** to open the Interactive Map Application.
2. In the **Add** tab, choose the data sets you which to search on
3. Filter each data set in the **Layer** tab.
4. Set alerts for any notifications that you wish to be notified about.
5. Take a screenshot and save an image of the current view with the button in the upper right corner.

For information about Vessels, there are often two fields of concern

1. AIS Draft (m): This shows the current depth of the vessel
2. Max Draft (M): Maximum depth the vessel can travel at

These two figures would reflect the weight of cargo on board. (<70%: usually empty and >97%: full)

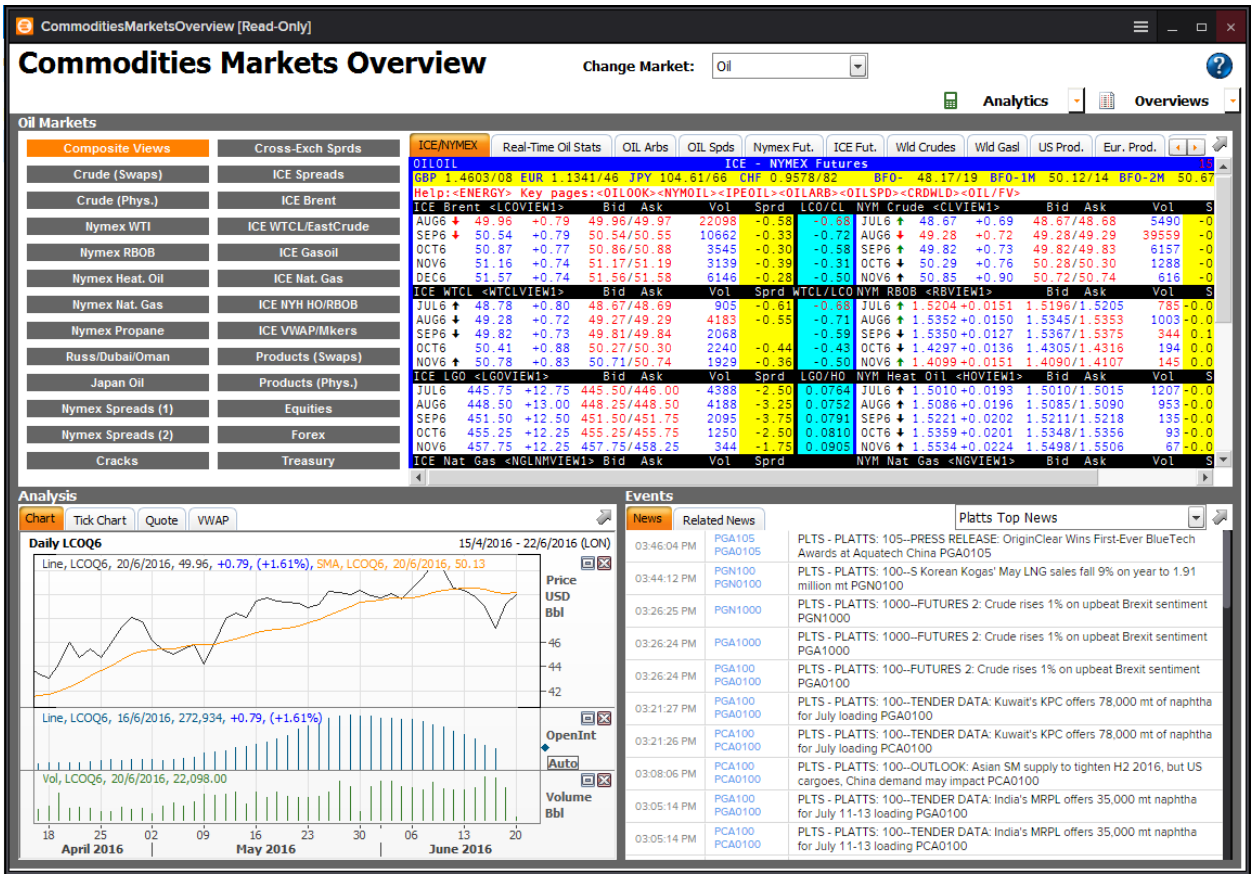
3. Commodities Market Overview Application <COMO>

Another useful app for Commodities traders would be the COMO application.

On this application, users can get a quick overview about all essential information about a certain commodity.

There are three main markets covered, agriculture, oil and metals.

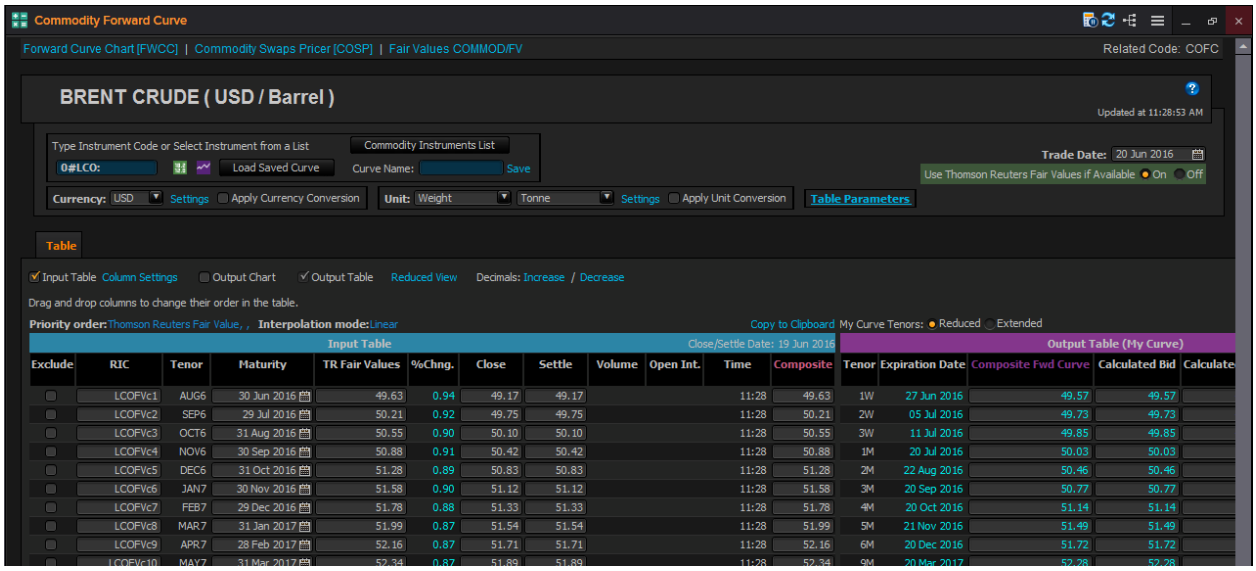
Through the various tabs, users can obtain a composite view of the market, as well as look into different Quote pages for spreads, swaps and basic treasury information.



4. Charting for Commodities

Commodity Forward Curve Application <COFC>

Using Eikon, one can plot the forward curve of different chain contracts using the **<COFC>** application.

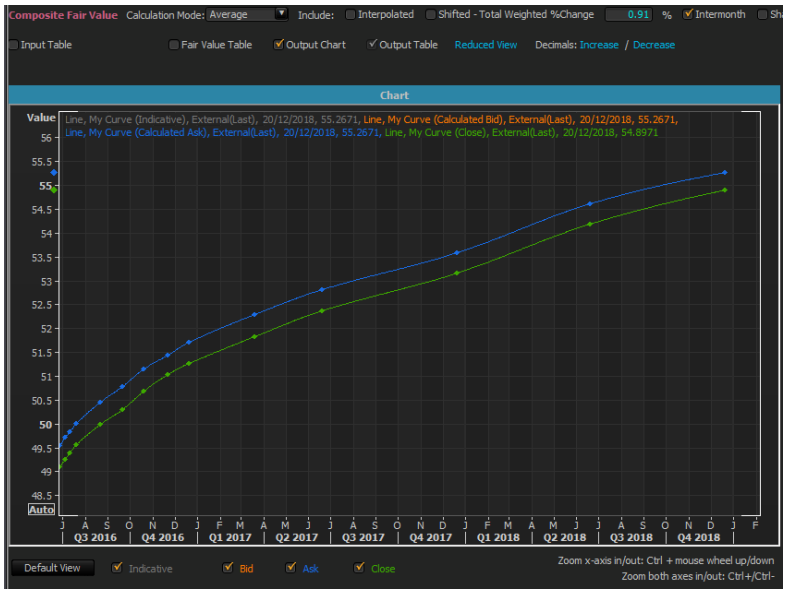


In order to generate the following chart, one should type **<COFC>** in the Eikon Toolbar.

In the app, the following could be customized.

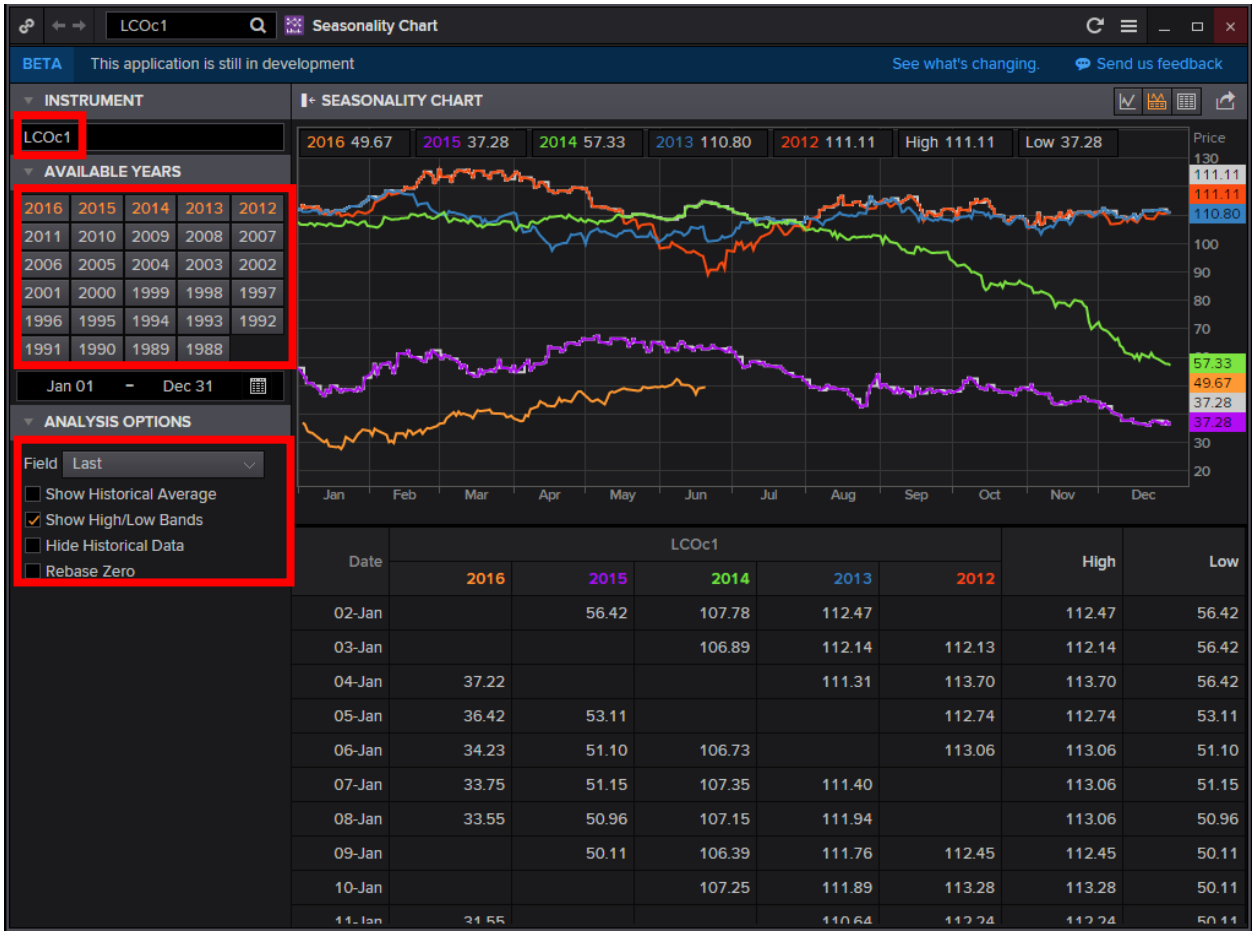
1. Instrument Chain Code
2. Currency
3. Units
4. Whether to use Thomson Reuters Fair Values

Check the "Output Chart" box and the following forward curve will be generated.



Seasonal Analysis Chart <SEAC>

Using the seasonal analysis chart **<SEAC>** application, one can plot the different prices of the contract on each day across different years. (E.g. the price of the contract every year on 14 January). This allows analysts and traders to observe the trend of prices within the year as well as comparing it to past trends.



1. In the Eikon Toolbar, search **<SEAC>** to open the application
2. Select the contract (continuation code) you would like to view, e.g. LCOC1
3. Select the number of years to include
4. If you require the historical average, high low bands etc, select the options in "**Analysis Options**"

This shows for example 5 successive years of the front month contract for Brent Crude Oil. Here, you can analyze the performance and trend for prices each year.

Term Structure

Using the term structure of a contract would allow you to see whether the market is in Backwardation or Contango. The terms are defined below.

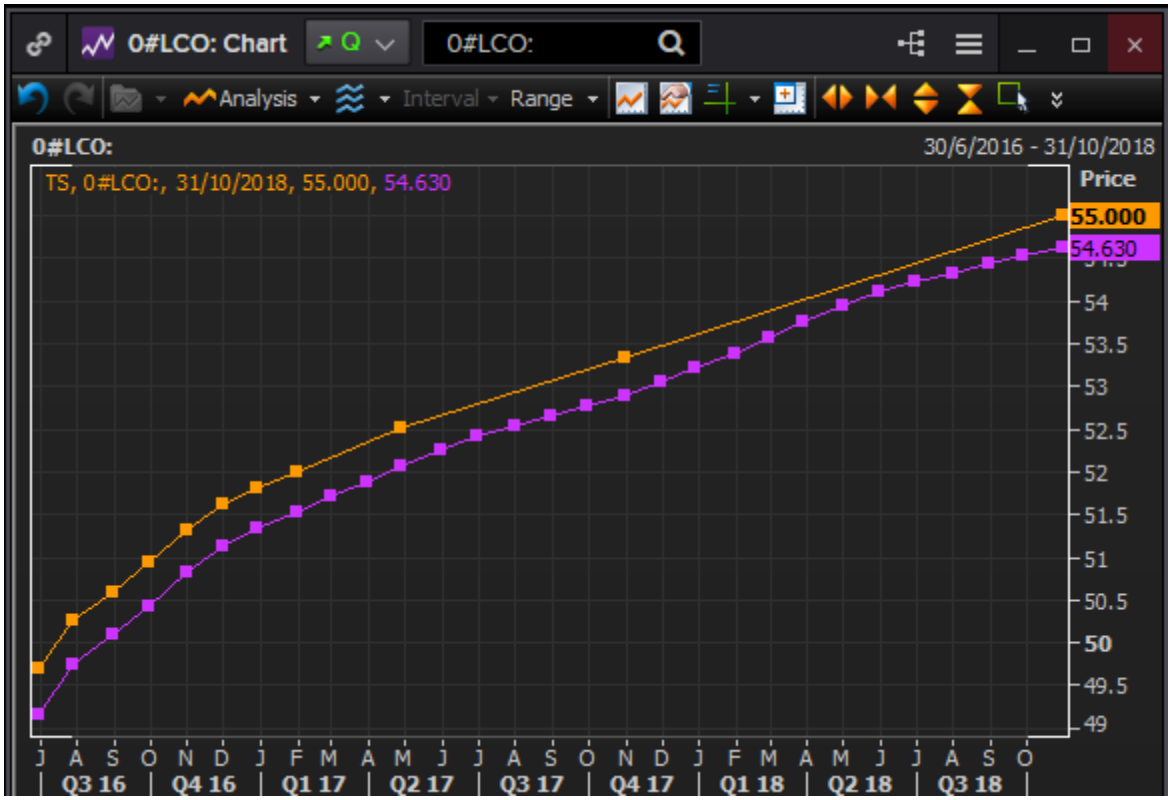
Contango: Market situation where the nearby price is lower than a further forward price. (Denoted by "c-" in the quote)

Backwardation: Market situation where a nearby price is higher than a further forward price. (Denoted by "b+" in the quote)

Term structure is usually used to monitor commodity markets where holding costs such as insurance and storage costs may cause distant futures prices to be at a premium to nearby futures prices.

1. Press F10 to open the chart app.

2. Type: 0#LCO: or 0#XXX: to pull up the default chart which is the term structure.



Hence, here we observe that the prices are in Contango, where the nearby contracts have lower prices than further futures. Hence the cash price is at a discount to the futures prices, or the nearby futures are at a discount to the distant futures. The last price and the previous close lines are sloping up.

One may observe that the term structure is similar to a yield curve but whilst the yield curve shows the yields of a single instrument over time, the term structure shows the different prices of chain contracts over time.

Commodity Spread Chart <SPDC>

The Commodity Spread Chart **<SPDC>** could be utilized to show a simple spread between any two, three of four commodities instruments and calculates the difference in the yield of those instruments. Traders can utilize the futures spread in an arbitrage technique where they buy one commodity and sell another contract of the same commodity to capitalize on price differences.

On this note, let us first define the 3 most common types of spreads in commodities.

1. Crack spread: As defined previously, the crack spread is the price differential between crude oil and one of its by-products, primarily gasoline, gas oil and heating oil.

2. Crush spread: Differential between soybean futures and soybean meal and oil futures – represents the premium inherent for processing soybeans

3. Spark spread: differential between natural gas and a unit of electricity, for gas-fired power stations.

Other spreads available in the SPDC app include

4. Crude spreads; the differential between different crude oils (WTI v Brent etc)

5. Different Agriculture Softs spreads (Coffee, Cocoa and Sugar).

Alternatively, the user can define any spread he wishes with the SPDC app.

In order to utilize the application in Eikon, the following steps could be performed.

1. In the Eikon toolbar, search <SPDC>

2. Under Spread Category, choose the type of commodity required (E.g. Energy, Agriculture etc).

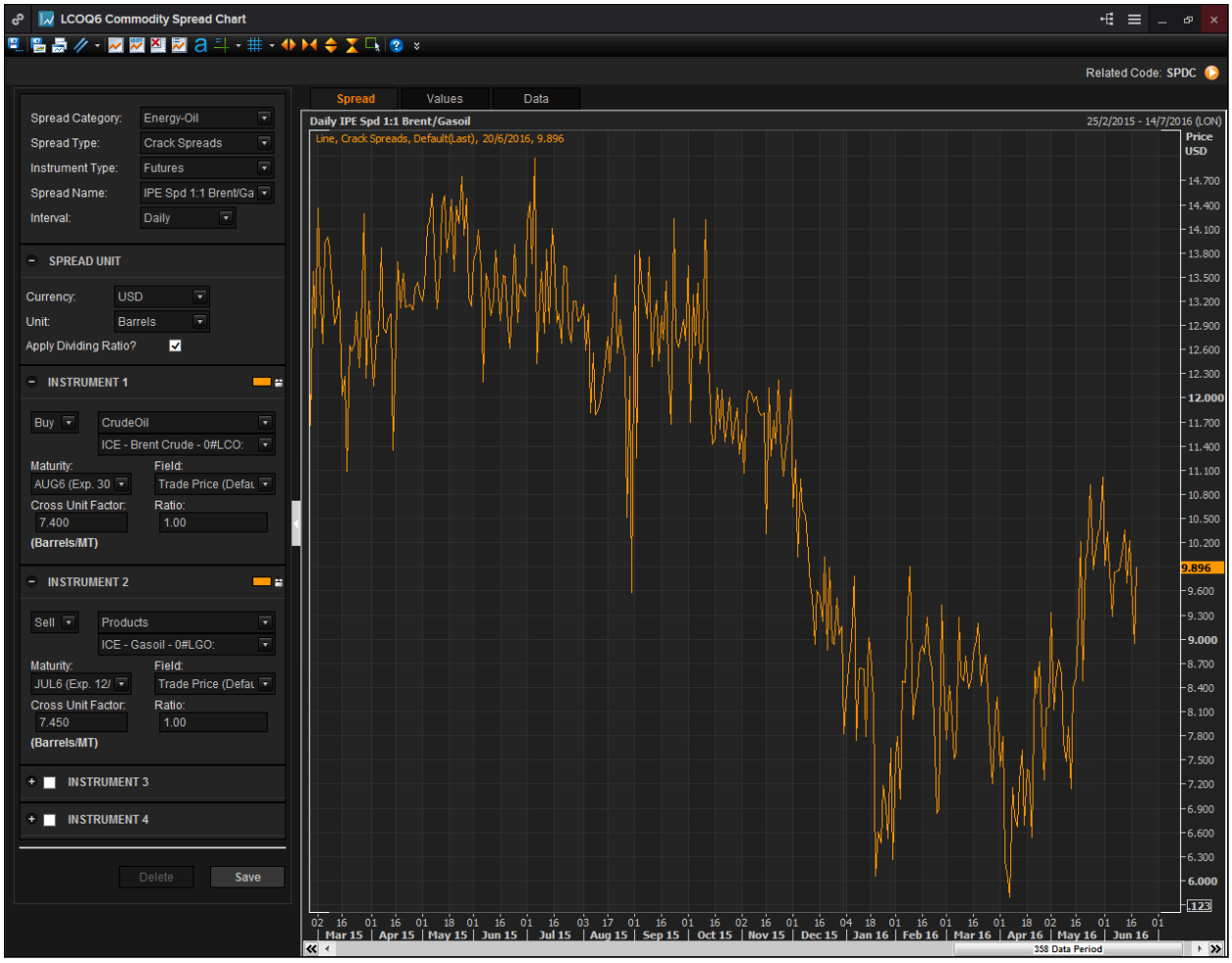
3. Under Spread Type, choose one of the 5 types as explained above or a used-defined spread

4. Choose the instrument type (Futures or Calendar Strips)

5. Select the interval of time and the currency and unit

6. Set the two contracts, whether to buy or sell crude and to buy or sell gasoline, gas oil and heating oil.

Refer to the next page for the screenshot of the application



One may realize that the interface of the SPDC application largely resembles that of the F10 Chart interface.

On this application, you are also able do different types of technical analysis, such as plotting trend lines, or Fibonacci retracements and projections.

Part 9A: Energy Market

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Eikon shortcuts: Energy

REAL TIME MONITORING	
ALT	Alert Manager
COPM	Commodities Prices Monitor
MON	Monitor
OPW	Option Watch
Q	Quote
QL	Quote List
QLI	Quote Line
TICK	Ticker

NEWS	
NEWS	News Monitor
TOPNEWS	Top News

CHARTING	
CHT	Chart App
SPDC	Commodity Spread Chart
FWDC	Forward Curve
VOLC	Volatility Chart
TEAC	Technical Analysis Chart
REBC	Rebasing Chart

ANALYTICS & CALCS	
AVRG	Average Calculator
CALC	Eikon Calculators
CFTC	Commodity Futures Trading Commission
COCM	Commodity Curve Monitor
COFC	Commodity Forward Curve
COOA	Commodity Options Analyzer
COSP	Commodity Swaps Pricer
CSPD	Cross-Commodity Spreads
ESPD	Energy Spreads
HURRICANE	Hurricane Tracker
MAP	Interactive Map
MAPTRK	Interactive Map Asset Tracker
OSPD	Oil Spreads
OSWO	Oil Swaps Overview
TANK	US Weekly Oil Stocks Estimates (API, EIA)
UKGSS	UK Gas Supply and Status
UKPSS	UK Power Supply and Status
VOLS	Volatility Surface Calculator

MARKETS – OIL	
BRENT	Brent Crudes Guide
CRUDE	Crude Guide
CRUDEDUB	Dubai Crudes Guide
CRUDEUS	US Light Sweet Crudes Guide
DIESEL	Diesel Guide
EWFO	Platts eWindow Market Data – Asia Financial – Fuel Oil – Daily Report
EWFP	Platts eWindow Market Data – Asia Physical Products – Fuel Oil – Daily Report
EWIN	Platts eWindow Market Data
FUELOIL	Fuel Oil Guide
GASHEAT	Gas Oil / Heating Oil Guide
GASOLINE	Gasoline Guide
JETFUEL	Jet Fuel Guide
LIQPETRO	Liquified Petroleum Gas Guide
NAPHTHA	Naphtha Guide
OILOUT	Fundamentals Database and Refinery Outages
OSWO	Swaps Overview
PETRO	Petrochemicals Guide
REFINED	Refined Products Guide

MARKETS – POWER	
IIRPWR	IIR Power Outages
POINTCARBON	PointCarbon
POWAUS	Power – Australia
POWBEL	Power – Belgium
POWBRA	Power – Brazil
POWCAISO	Power – CAISO (California ISO)
POWCAN	Power – Canada
POWCEEUR	Power – Central and Eastern Europe
POWCHE	Power – Switzerland
POWCZE	Power – Czech Republic
POWEBL	Energy Bank Link (EBL)
POWERCOT	Power – ERCOT
POWESP	Power – Spain
POWEUR	Power – Continental Europe
POWFRA	Power – France
POWGER	Power – Germany
POWITA	Power – Italy
POWNLD	Power – Netherlands
POWNOR	Power – Norway
POWNORDIC	Power – Nordic
POWPNW	Power – PNW (Northwest)
POWRENEW	Power – Renewables
POWSWE	Power – Sweden
POWTUR	Power – Turkey
POWUK	Power – United Kingdom
POWUSA	Power – United States

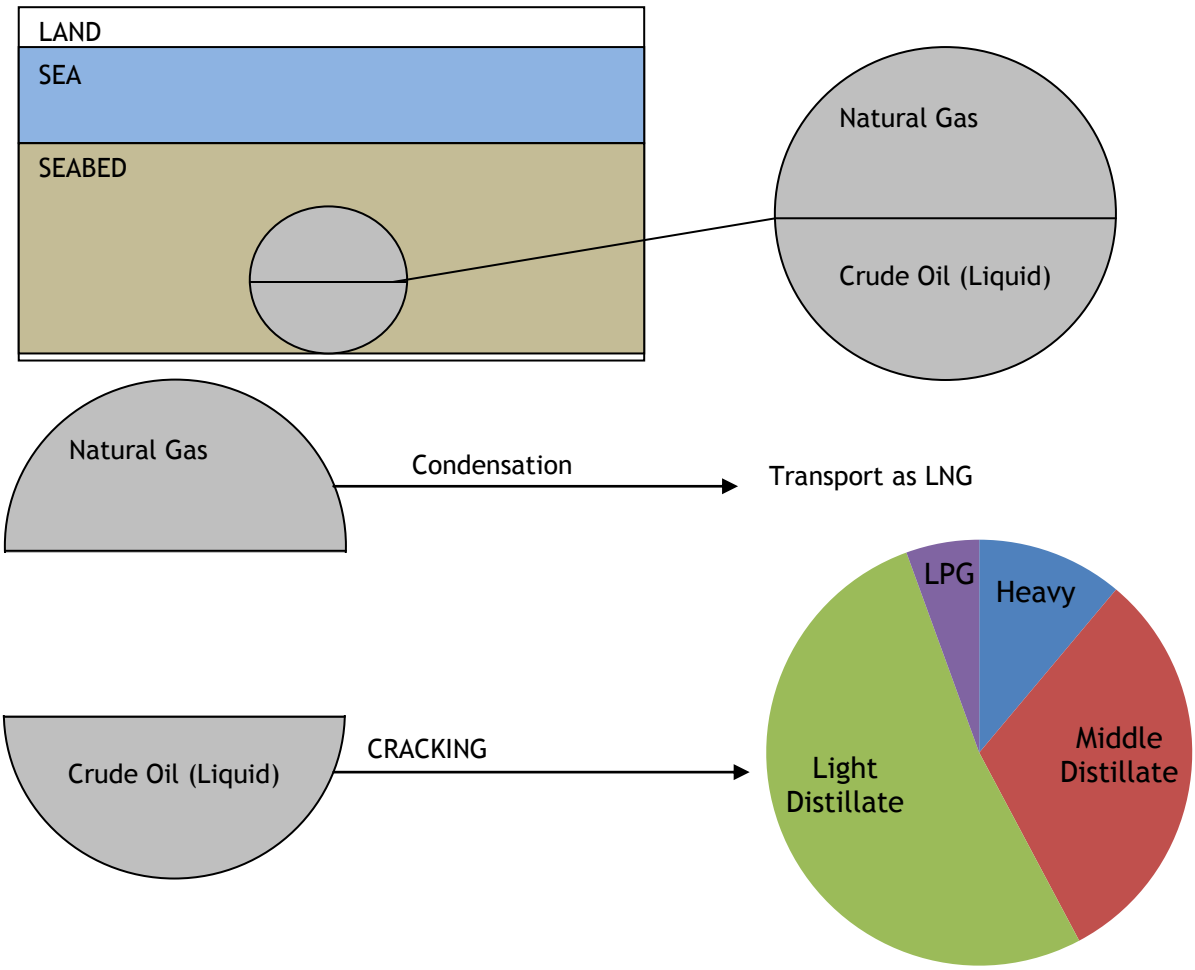
MARKETS – GAS	
GASEUR	Gas – Continental Europe
GASUK	Gas – United Kingdom
GASUS	Gas – USA

MARKETS – COAL	
COALAUS	Coal – Australia Guide
COALCHN	Coal – China
COALEUR	Coal – Europe Guide
COALZAF	Coal – South Africa Guide
COALUS	Coal – United States Guide

MARKETS – CARBON	
CARBAMER	Carbon – Americas Guide
CARBAPAC	Carbon – Asia-Pacific Guide
CDMJI	Carbon – CDM/JI Guide
CARBCM	Carbon – Crediting Mechanisms Guide
CARBEUR	Carbon – Europe Guide
CARBGCP	Carbon – Global Climate Policy Guide
CARBNEWC	Carbon – New Credits Guide
CARBNAOFF	Carbon – North America Offsets Guide

SEARCH TOOLS	
ANSWERS	Eikon Answers
ENESRCH	Energy – Advanced Search
OILREF	Oil Refineries Advanced Search
PHYSICALSRCH	Commodities Physical Assets – Advanced Search
WEATHERSRC	Weather – Advanced Search

1. Overview



Raw Materials

From within the seabed, oil rigs will drill for oil, and will obtain two different types of raw materials.

1. Natural Gas

2. Liquid Crude Oil

The natural gas would be condensed under high pressure and will be transported as LNG (Liquefied natural gas).

Crude oil will then undergo a distillation process known as cracking in order to produce other products. However, at this point it would be good to differentiate the three different types of crude oil.

Crude Oil

A: Brent (ICE)

Brent is the world's benchmark for about 2/3 of the oil traded around the world. Crude here is light and sweet, ideal for diesel fuel, gasoline and other products. Supply is also water-borne and easy to transport. The continuation code for Brent is **<O#LCO:>**

B: WTI (NYMEX)

However, WTI (West Texas Intermediate) is a type of sweet crude which is traded on NYMEX and is the US Benchmark. Oil here is extracted from wells in US and sent via pipeline to Cushing, Oklahoma. The continuation code for WTI is **<O#CL:>**

C: Dubai/Oman

The last type of Crude Oil is Dubai/Oman which is middle-eastern crude, a good reference for oil at a slightly lower grade than WTI or Brent. Oil here is heavier and has higher sulphur content. Thus, it is categorized as sour crude. Dubai/Oman is the main reference for Persian Gulf Oil delivered to the Asian market. The continuation code for Dubai/Oman is **<0#1OQ:>.**

Distillates

After cracking the crude oil, the following products would be obtained, and could be categorized into the following categories.

1. Heavy Distillates

Heavy distillates, together with crude oil are categorized as "dirty" crude and are transported using specific vessel which cannot be utilized with "clean" crudes such as other distillates.

An example of a heavy distillate is fuel oil, used for ships and tankers. Fuel oil is heavily traded in Singapore, being a port city.

After distillation, fuel oil becomes less profitable compared to other distillates.

2. Middle Distillates

Middle distillates include products such as jet fuel and kerosene. Gas oil used in power plants is also another example of a heavy distillate. Gas oil has a continuation code of **<0#LGO:>**.

3. Light Distillates

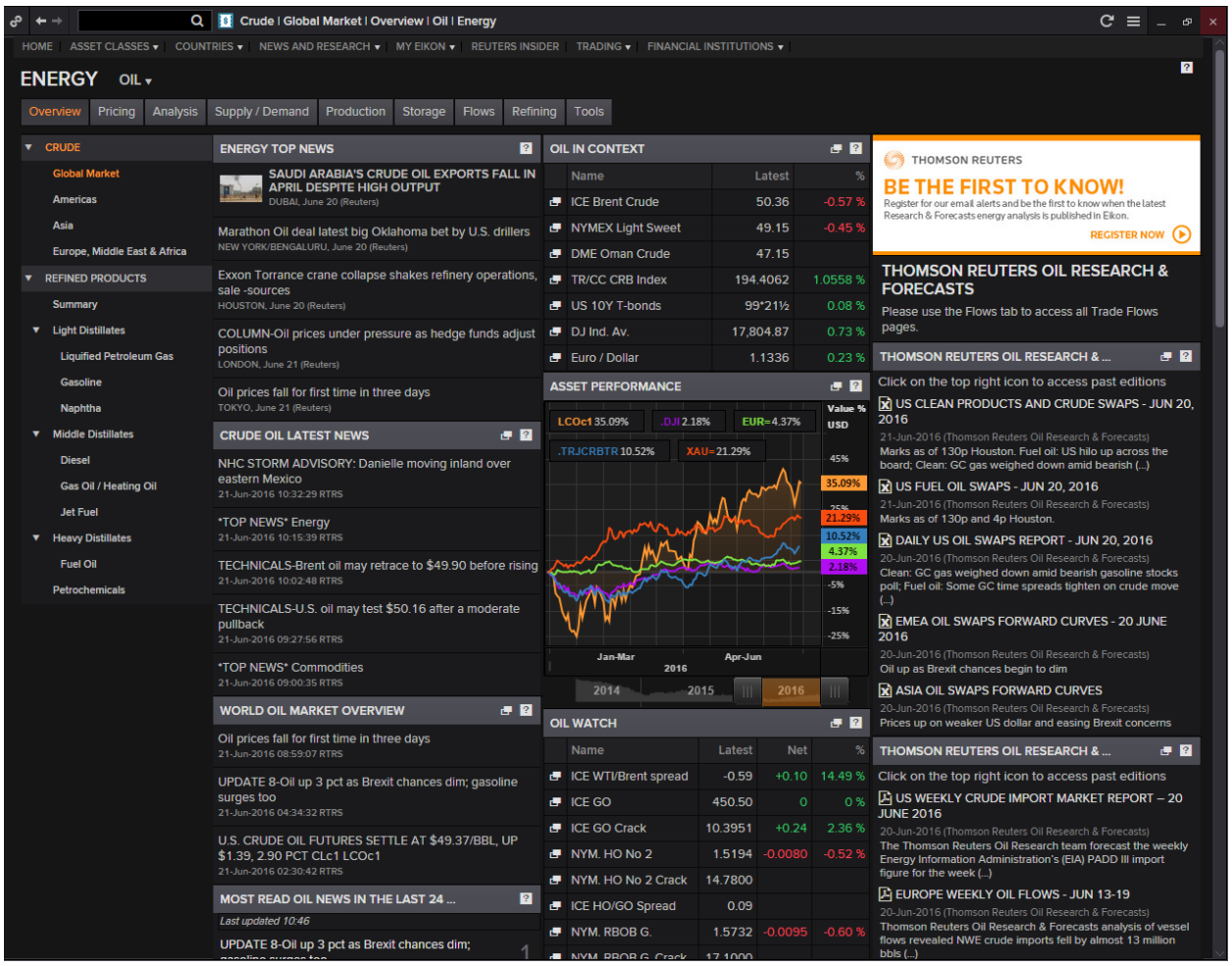
Light distillates include gasoline and NaphtGa. NaphtGa can undergo further cracking to produce petrochemical products. Gasoline has a continuation code of **<0#RB:>**.

4. Liquefied Petroleum Gas (LPG)

The last product of cracking is Liquefied Petroleum Gas (LPG), the commonly used gas product for cooking and vehicle fuel.

2. Energy Homepage

Overview



The energy homepage contains a quick overview of all necessary information that a typical user would require. By default, the page is set to open at Crude Oil, Global Market page.

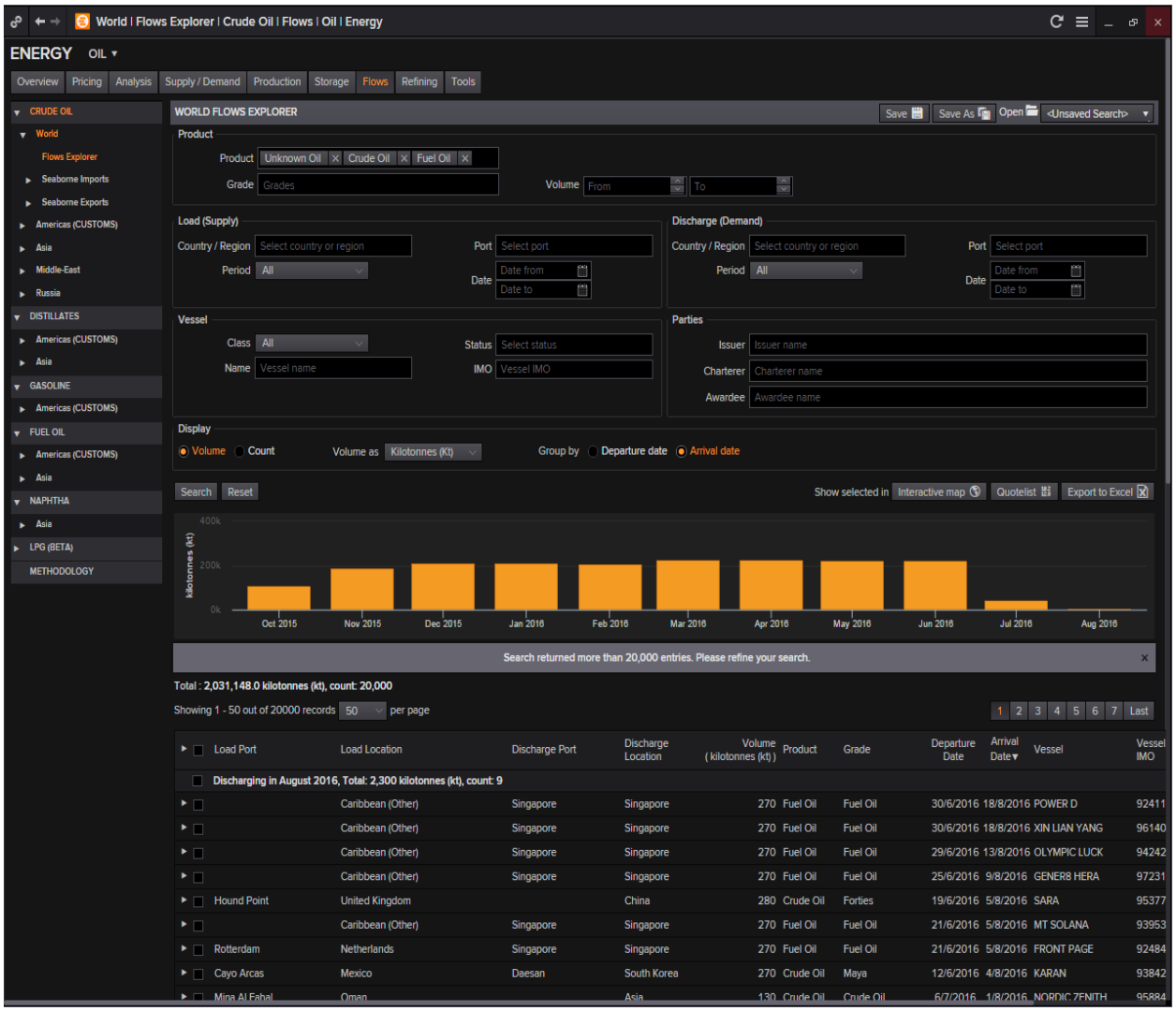
Key information on this page include top news of the Energy market, as well as key oil prices and spreads as well as latest news about crude and the world oil market.

From this page, users can navigate to other pages within Eikon such as different types of energy products as well as to view information about the pricing, supply and demand of oil as well as production, storage and flows.

We will now look at the flows portion in detail.

Oilflow

To arrive at this page, go to Home> Asset Classes> Commodities> Energy> Oil> Flows



Using the Energy Homepage > Flows, one is able to reach the above page.

In this application, users are able to choose specific oil products in different areas of the world in order to view an overview of vessels that are likely to dock at those ports or about to leave those ports. These information are collated from the vessels' crew themselves or the ports and thus the amount of information available may differ from vessel to vessel or location to location.

The Interactive Map could also be employed here in order to view the likely path travelled by the vessel where users can analyze the potential risks that the vessels may face, such as piracy and weather threats.

This would allow analysts to forecast potential delays in delivery, which may affect the supply of oil and subsequently the price of oil as well.

3. Oil Fundamental Database and Outages <OILOUT>

For users who want a historical record as well as future forecast of oil refinery outages, the Oil Fundamental Database and Outages, **OILOUT** application would be a key application to look at. Whereas Interactive Map **(MAP)** only provides a real-time view, **OILOUT** would be a good application for users to observe past trends of outages and its impact on oil production and price.

To arrive at the following page,

1. In the Eikon Toolbar, type **<OILOUT>**

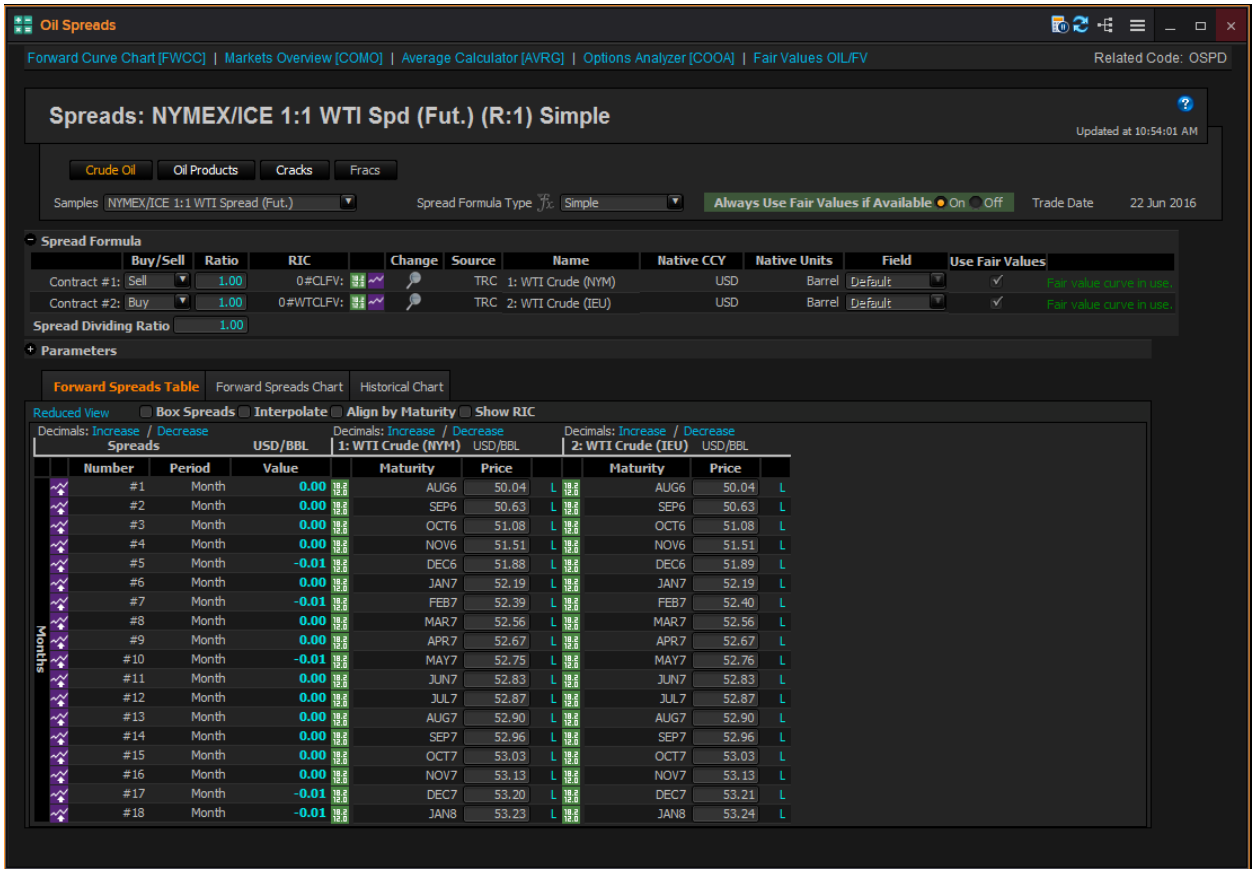
2. Toggle with the different settings such as the data source, geographic area and the date range.

4. Oil Applications

Oil Spreads <OSPD>

The oil spread calculator enables trades to monitor various types of spreads such as those between

1. Crude Oil
2. Oil Products
3. Crack Spreads
4. Fractional Spreads: Profit margin for a gas processor (revenue from LNG minus cost of Natural Gas)

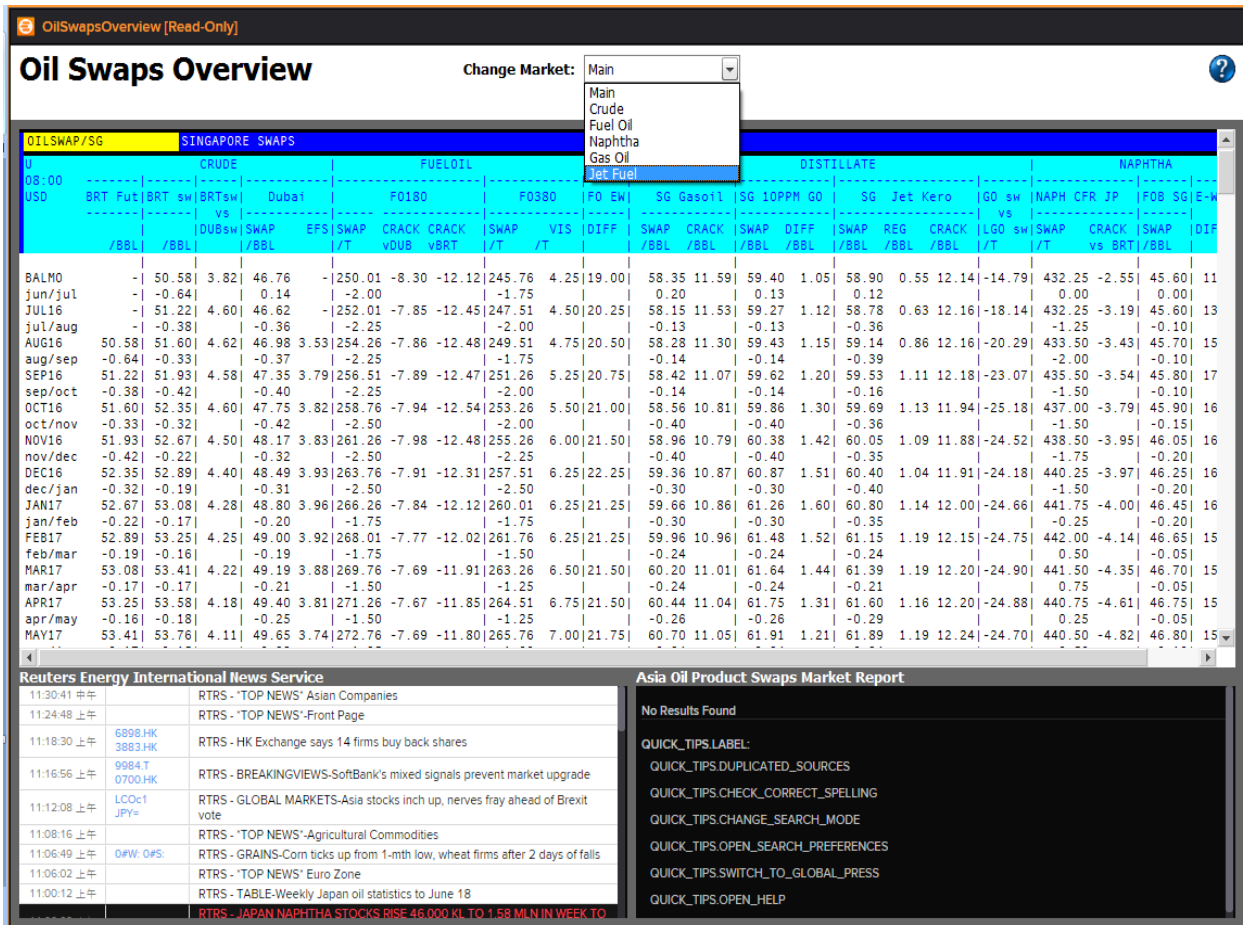


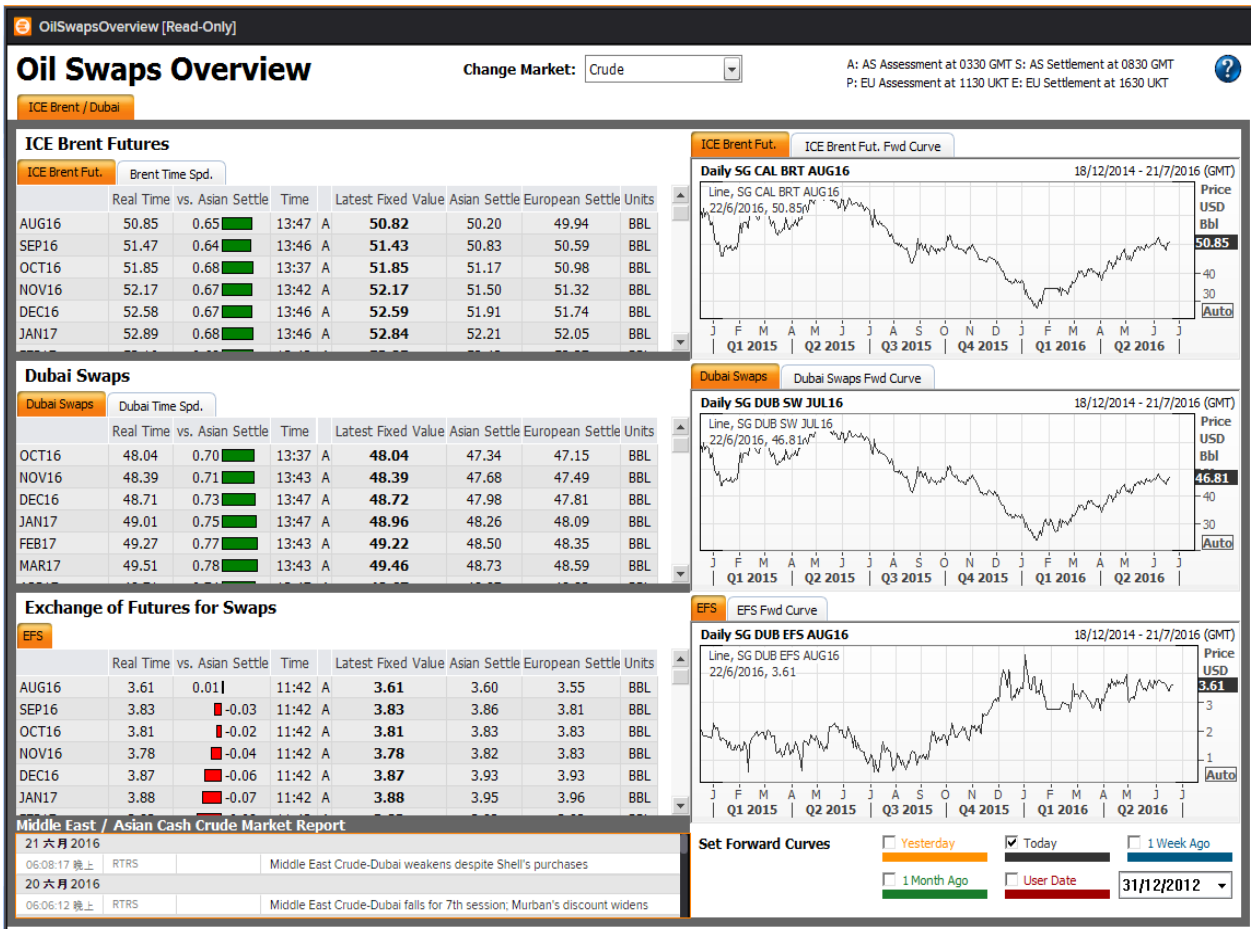
To arrive at the above page,

1. In the Eikon Toolbar, enter **<OSPD>**
2. Choose the type of spread you would like to monitor (from 1-4 above)
3. Choose the contracts you would like to view (e.g. NYMEX/ICE 1:1 WTI Spread (Fut.))
4. The spread formula allows you to choose a type of calculation formula (simple or complex)
5. Define the contract (which to sell and which to buy)
6. View the underlying prices, calculated spreads and intermonth spreads.
7. If the chart is needed, you could view the historical chart or the forward spreads chart.

Oil Swaps Overview <OSWO>

The Oil Swaps Overview page gives a one page overview of the different swaps available for different intracommodity and intercommodity swaps. E.g. Brent-WTI swaps and Crude-Fuel Oil swaps or calendar swaps which are swaps between the contracts expiring in July and Aug. The page is a read-only page where details on the page cannot be customized. However, by default, different swaps are provided as shown in the main page snapshot below and the specific market snapshot in the next page.





On the page for specific markets, the list of contracts across time and the charts for the price of the first month contract and its forward curves can be seen.

To navigate to the Oil Swaps Overview page, one should do the following.

1. In the Eikon Toolbar, enter **<OSWO>**

2. In the “Change Market tab”, one can specify the type of market they are interested in.

Part 9B: Metals Market

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Eikon shortcuts: Metals

REAL TIME MONITORING	
COPM	Commodities Prices Monitor
LMEO	LME Overview
OPW	Option Watch
Q	Quote
QL	Quote List
QLI	Quote Line
SDB	Sidebar
TICK	Ticker

NEWS	
NEWS	News
TOPNEWS	Top News
OPECO	Organization of the Petroleum Exporting Countries
CONM	Commodities News Monitor

CHARTING	
SPDC	Commodities & Energy Spread Chart
FWDC	Forward Curve
FWCC	Forward Curve Chart
METO	Metals Outrights

ANALYTICS AND CALCS	
ASPD	Agriculture Spreads
AVRG	Average Calculator
CALC	Eikon Calculators
COCM	Commodity Curve Monitor
COSP	Commodity Swaps Pricer
CSPD	Cross-Commodity Spreads
EWIN	Platts eWindow Market Data
MAP	Interactive Map
MSPD	Metals Spreads
POWPJM	Power – PJM
TANK	US Weekly Oil Stocks Estimates (API, EIA)
VOLS	Volatility Surface Calculator
MAPTRK	Interactive Map Asset Tracker
HURRICANE	Hurricane Tracker
CFTC	Commodity Futures Trading Commission
FRGHT	Shipping

METALS	
LMEO	LME Overview
ALUM	Metals – Aluminium Guide
BASEMET	Metals – Base Metals Guide
COPPER	Metals – Copper Guide
GOLD	Metals – Gold Guide
IRONSTEEL	Metals – Iron & Steel Guide
LEAD	Metals – Lead Guide
MINORMET	Metals – Minor Metals Guide
OTHERMET	Metals – Minor Metals, Ores, Scrap and Secondary Guide
NICKEL	Metals – Nickel Guide
PALLAD	Metals – Palladium Guide
PLAT	Metals – Platinum Guide
PRECMET	Metals – Precious Metals Guide
SILVER	Metals – Silver Guide
TIN	Metals – Tin Guide
URANIUM	Metals – Uranium Guide
ZINC	Metals – Zinc Guide
METO	Metals Outrights
MSPD	Metals Spreads
MET	Metals Fundamental Database
GFMSPREC	GFMS Precious Metals
GFMSBASE	GFMS Base Metals
GFMSAU	GFMS Gold
GFMSCU	GFMS Copper

METALS – APPS & TOOLS FOR INDIVIDUAL METALS (IE XAU= , XAG=) Note: In order to see the tools select the metal by hitting the down arrow and then hit the <space> bar. e.g. "XAU= OV" or "Gold OV"	
OV	Overview
QH	Quote History
CHTV	Chart (Commodities Chart view)
ETFH	ETF Holdings
GFMS	GFMS
VOLC	Volatility Chart

COMMODITY FUTURES – APPS & TOOLS FOR INDIVIDUAL METALS (IE XAU= , XAG=)	
OV	Overview
QH	Quote History
CHTV	Chart (Commodities Chart view)
CS	Contract Specifications

MISC – CONTEXTUAL ITEMS FOR COMMODITIES	
Q	Quote
CHT	Chart (Chart object)
NEWS	News
REBC	Rebasing Chart
TEAC	Technical Analysis Chart
HRA	Historical Return Analysis
REGR	Regression Analysis
TAS	Time & Sales comonent

1. Overview

There are three main types of metals:

1. Base Metals

Base metals are non ferrous metals that do not contain iron and are neither precious nor strategic. Some base metals are copper, lead, aluminium, tin, nickel and zinc.

2. Strategic and Minor metals

Strategic and minor metals are metals whose production is relatively small compared to base metals and are predominately a by-product of base metal mining.

Some minor metals include mercury, cadmium and cobalt.

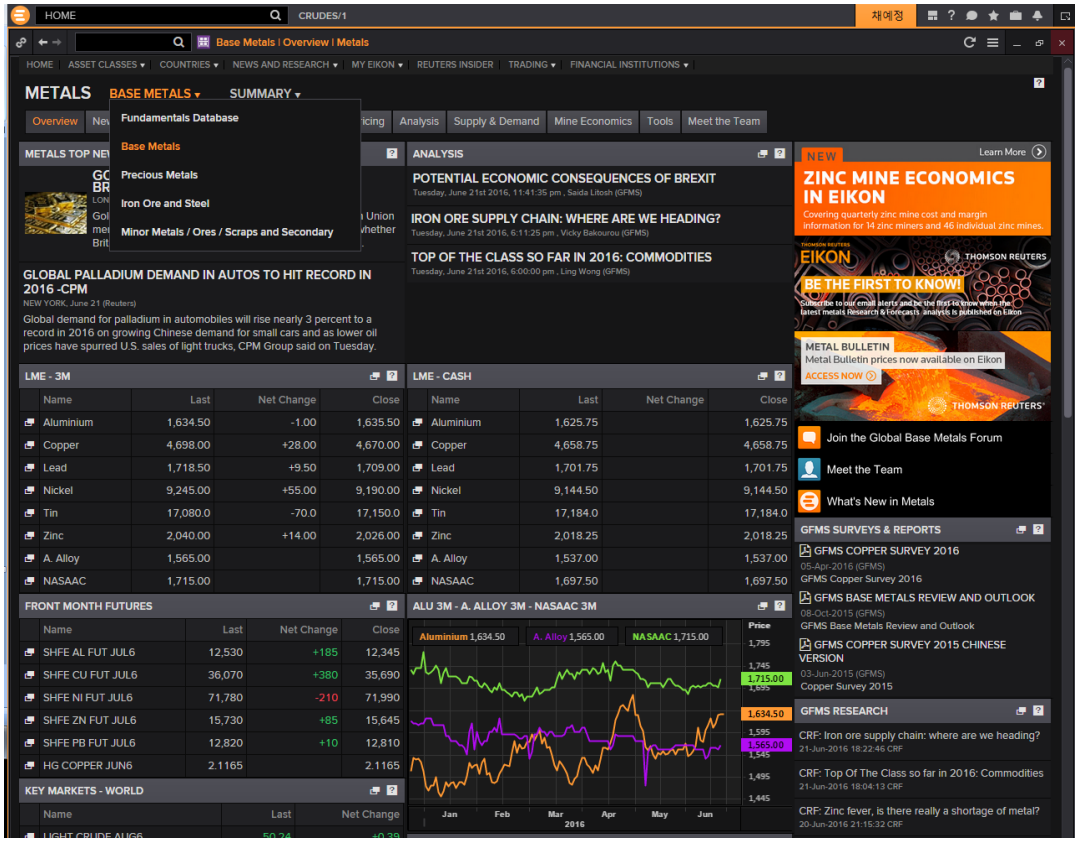
3. Precious Metals

Precious metals are a class of metals considered to be rare and of high economic value. This could be driven by their rarity, uses in industrial processes and use as an investment commodity. Some precious metals are gold, silver, platinum and palladium.

The last type of metals would be **iron ore and steel.** This group of metals are limited to only iron ore from different markets and steel.

Metals Homepage

This is the Metals Overview page where all key information on the metals market can be found.



To Navigate to this page, do the following: Home>Asset Classes> Commodities> Metals

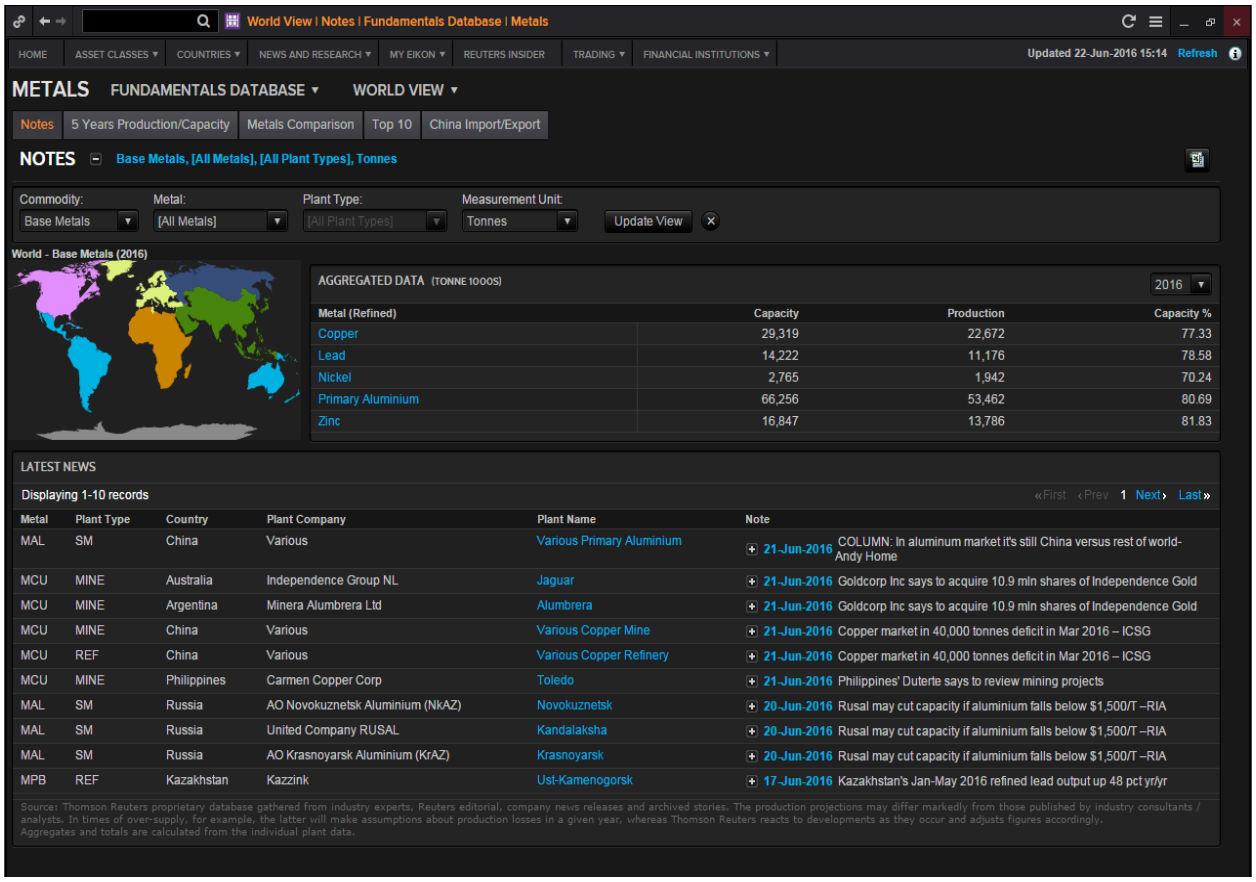
2. Metals Fundamentals Database

The Metals Fundamentals Database provides essential. Up-to-date global statistics for all know aluminium, copper, zinc, lead, nickel, platinum and gold operations around the world.

To arrive at the following page, one can do the following

Home>Asset Classes> Commodities> Metals> Fundamentals Database

OR to search **<Metals Fundamentals Database>** in the Eikon Toolbar.



Information on the Fundamentals Database is derived from industry experts, Reuters editorials, Company News Releases and Archived news.

On the Fundamentals Database, users can view information about the different production plants in different parts of the world or to refer to the plant view for key notes, an aggregate database of the past 5 years production capacity, comparison between metals etc.

For example, users can find the name of the South African plant with the second highest platinum production figures amongst 2016 estimates and the plant's shareholding companies and the breakdown of holdings.

Also, shareholder production reports can also be retrieved to find the percentage of a certain metal attributable to individual companies.

3. GFMS

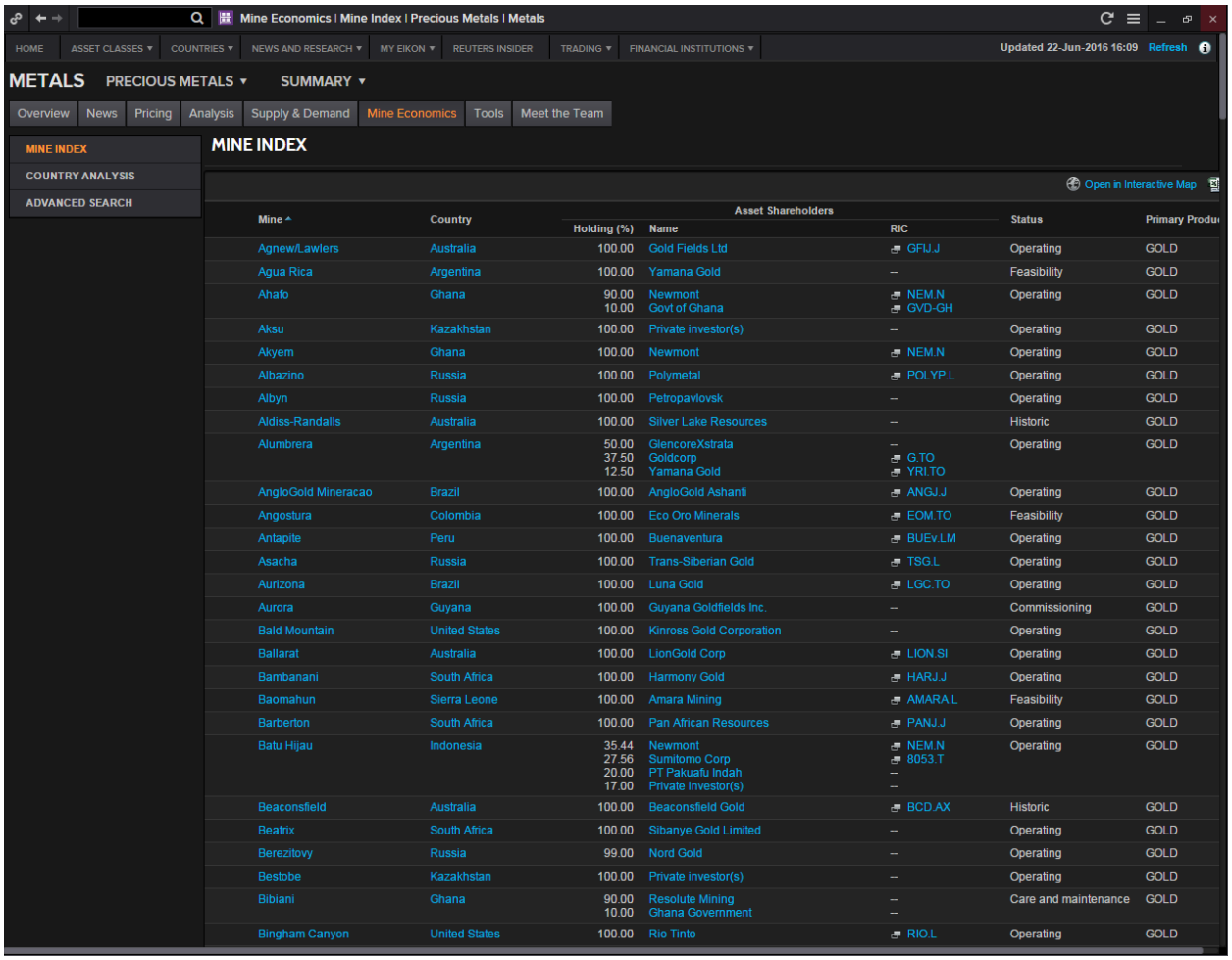
Mine Economics

Another page where users can obtain information about Metal Fundamental Data is the GFMS Mine Economics Page. This page provides users data on gold mines, such as detailed production and cost forecasts for the next 15 years, for over 350 major gold mines and projects globally.

To reach the following page,

Users can search **<MINECS>** in the search bar OR

Home> Asset Classes> Commodities> Metals> Precious Metals>Mine Economics



Mine	Country	Asset Shareholders			Status	Primary Produ
		Holding (%)	Name	RIC		
Agnew/Lawlers	Australia	100.00	Gold Fields Ltd	GFIJ.J	Operating	GOLD
Agua Rica	Argentina	100.00	Yamana Gold	--	Feasibility	GOLD
Ahafo	Ghana	90.00 10.00	Newmont Govt of Ghana	NEM.N GVD-GH	Operating	GOLD
Aksu	Kazakhstan	100.00	Private investor(s)	--	Operating	GOLD
Akyem	Ghana	100.00	Newmont	NEM.N	Operating	GOLD
Albazino	Russia	100.00	Polymetal	POLYP.L	Operating	GOLD
Albyn	Russia	100.00	Petropavlovsk	--	Operating	GOLD
Aldiss-Randalls	Australia	100.00	Silver Lake Resources	--	Historic	GOLD
Alumbrera	Argentina	50.00 37.50 12.50	GlencoreXstrata Goldcorp Yamana Gold	-- G.TO YRI.TO	Operating	GOLD
AngloGold Mineracao	Brazil	100.00	AngloGold Ashanti	ANGJ.J	Operating	GOLD
Angostura	Colombia	100.00	Eco Oro Minerals	EOM.TO	Feasibility	GOLD
Antapite	Peru	100.00	Buenaventura	BUEv.LM	Operating	GOLD
Asacha	Russia	100.00	Trans-Siberian Gold	TSG.L	Operating	GOLD
Aurizona	Brazil	100.00	Luna Gold	LGC.TO	Operating	GOLD
Aurora	Guyana	100.00	Guyana Goldfields Inc.	--	Commissioning	GOLD
Bald Mountain	United States	100.00	Kinross Gold Corporation	--	Operating	GOLD
Ballarat	Australia	100.00	LionGold Corp	LION.SI	Operating	GOLD
Bambanani	South Africa	100.00	Harmony Gold	HARJ.J	Operating	GOLD
Baomahun	Sierra Leone	100.00	Amara Mining	AMARA.L	Feasibility	GOLD
Barberton	South Africa	100.00	Pan African Resources	PANJ.J	Operating	GOLD
Batu Hijau	Indonesia	35.44 27.56 20.00 17.00	Newmont Sumitomo Corp PT Pakuafu Indah Private investor(s)	NEM.N 8053.T -- --	Operating	GOLD
Beaconsfield	Australia	100.00	Beaconsfield Gold	BCD.AX	Historic	GOLD
Beatrix	South Africa	100.00	Sibanye Gold Limited	--	Operating	GOLD
Berezitovy	Russia	99.00	Nord Gold	--	Operating	GOLD
Bestobe	Kazakhstan	100.00	Private investor(s)	--	Operating	GOLD
Bibiani	Ghana	90.00 10.00	Resolute Mining Ghana Government	-- --	Care and maintenance	GOLD
Bingham Canyon	United States	100.00	Rio Tinto	RIO.L	Operating	GOLD

Under Mine Index, a detailed overview of different mines, their countries and their shareholders can be found. From here, we can view the statuses of these mines.

Under country analysis, we can view the All-in-Cost curves of different countries and to find out how a certain country compares to other countries and which country has the highest gold mining costs.

Lastly, advanced search would allow you to search up on specific mines, countries and companies.

Forecast and Research

GFMS provide independent analysis and research into the metals markets combined with outlooks and forecasts covering all key traded metals over a wide range of forward and historic periods.

The list of GFMS Pages available on Eikon is as follows. Simply search the respective code (located in the first column) in the Eikon Toolbar for the individual pages.

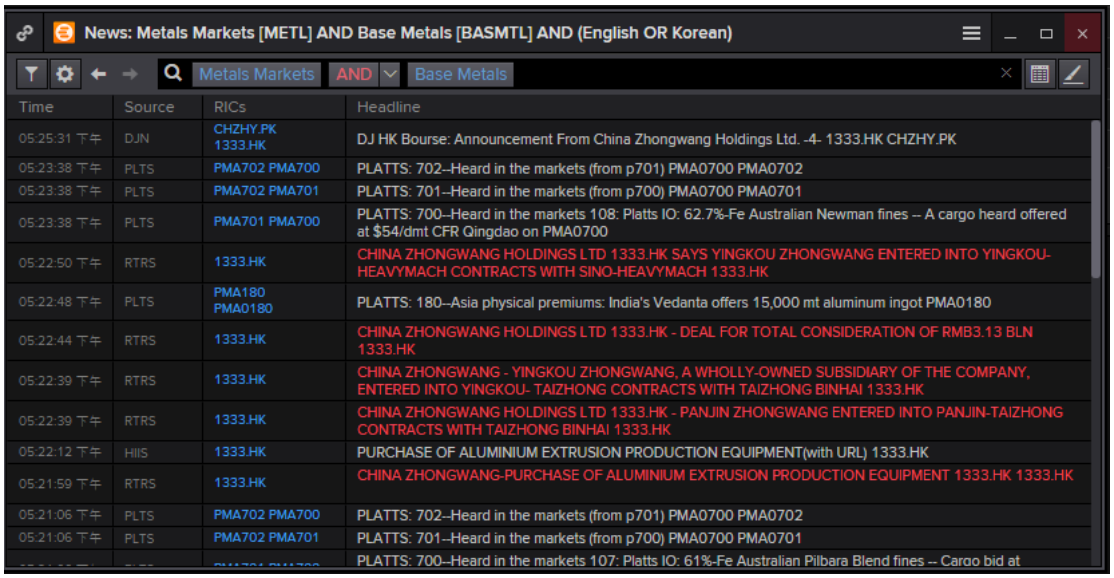
GFMSPD		GFMS Palladium Homepage	Palladium market commentary and research homepage from GFMS.
GFMSPREC		GFMS Precious Metals Homepage	Precious Metals Analysis and research from GFMS
GFMSBASE		GFMS Base Metals Homepage	Base Metals Analysis and research from GFMS
GFMSPT		GFMS Platinum Homepage	Platinum market commentary and research homepage from GFMS.
BASEMINEC		GFMS Mine Economics: Copper	Thomson Reuters Copper Cost Service, updated on a quarterly basis from company releases to provide the market the most current operating and cost data.
GFMSAG		GFMS Silver Homepage	Silver market commentary and research homepage from GFMS.
GFMSCU		GFMS Copper Homepage	Copper market commentary and research homepage from GFMS
GFMSAU		GFMS Gold Homepage	Gold market commentary and research homepage from GFMS
GFMSZN		GFMS Zinc Homepage	Zinc market commentary and research homepage from GFMS

On the individual Eikon pages, a summary of the supply and demand of the various types of metals can be seen. Also, a price comparison of different similar metals (e.g. all the base metals) are presented in a chart for easy comparison and analysis. The official 3M contract on LME is also presented for the users to view together.

4. News

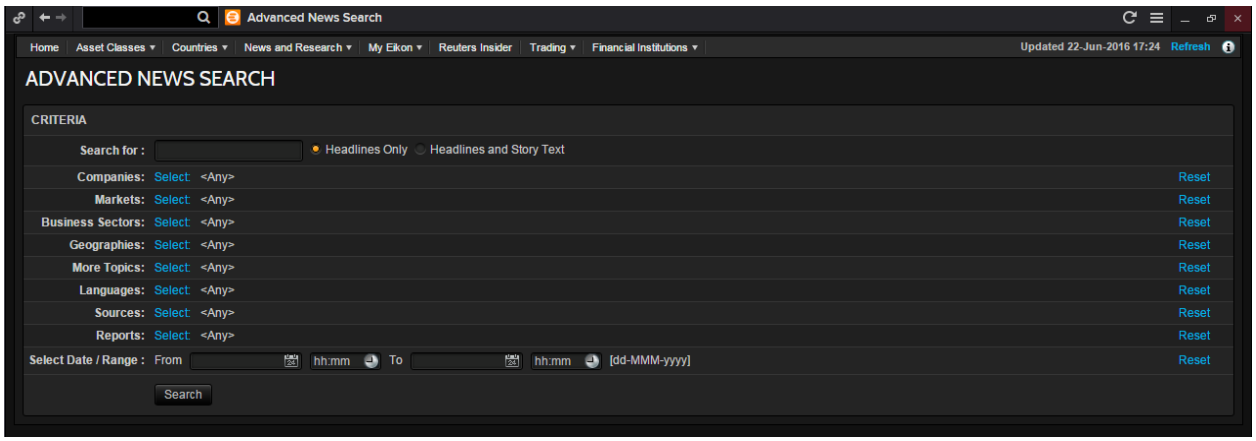
There are 3 common ways for users to obtain Reuters News on all metals, namely, base, precious and minor metals.

1. Press **F9** to open the News App and search the specific metals' news you are interested in



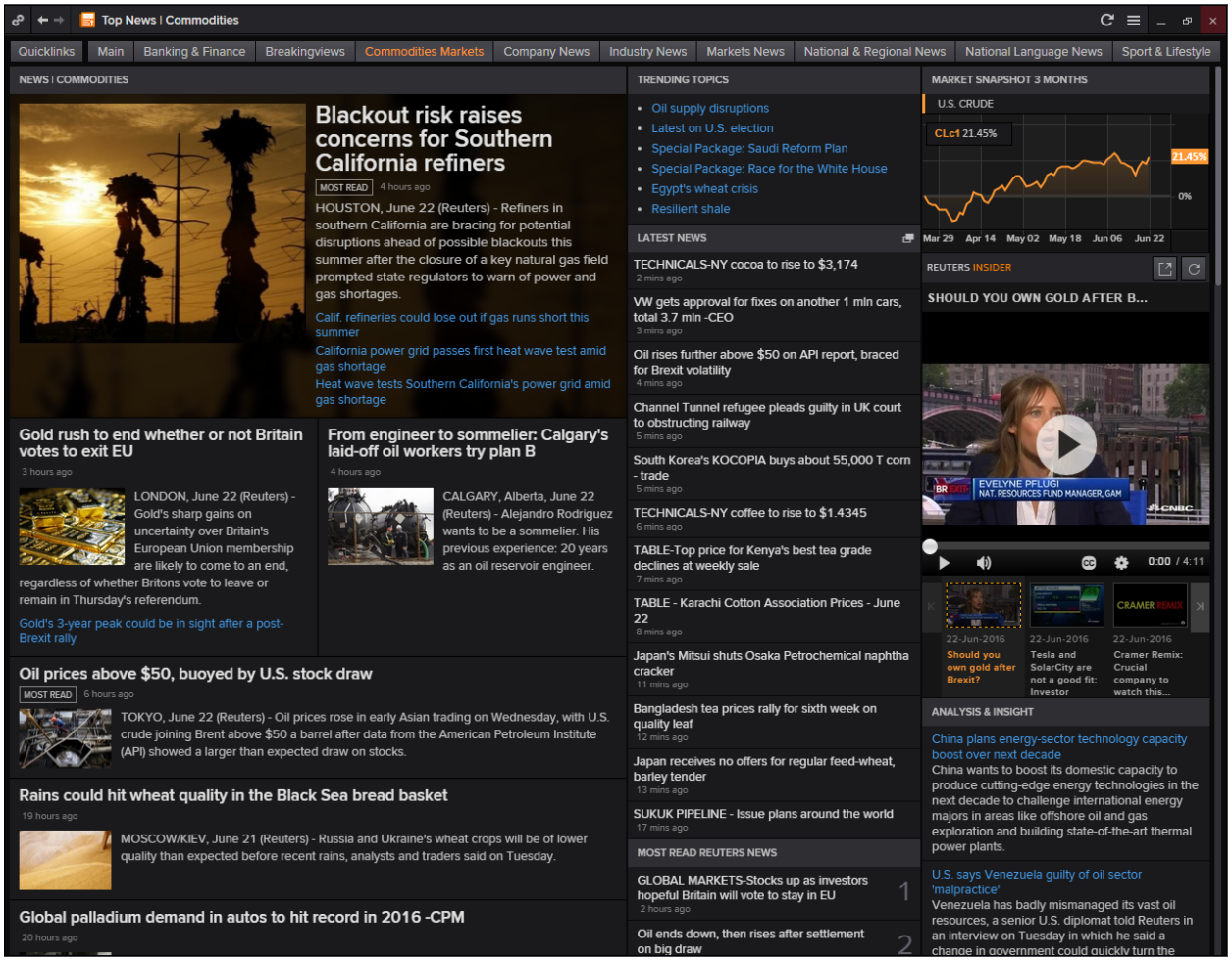
2. Use the Advanced News Search function.

   Home> News and Research> Advanced News Search



3. View Top News to find specific news on that market

Home> News and Research> Reuters Top News> Commodities Markets



Alternatively, going to the Homepage for the different metals would display the top news for each metal type as well.

5. London Metal Exchange

The London Metal Exchange is the largest market of exchange for base metals, with over 80% of all base metal futures businesses transacted on it.

There are three trading methods at the LME; the Ring, 24 hour telephone and LME Select.

Ring Trading

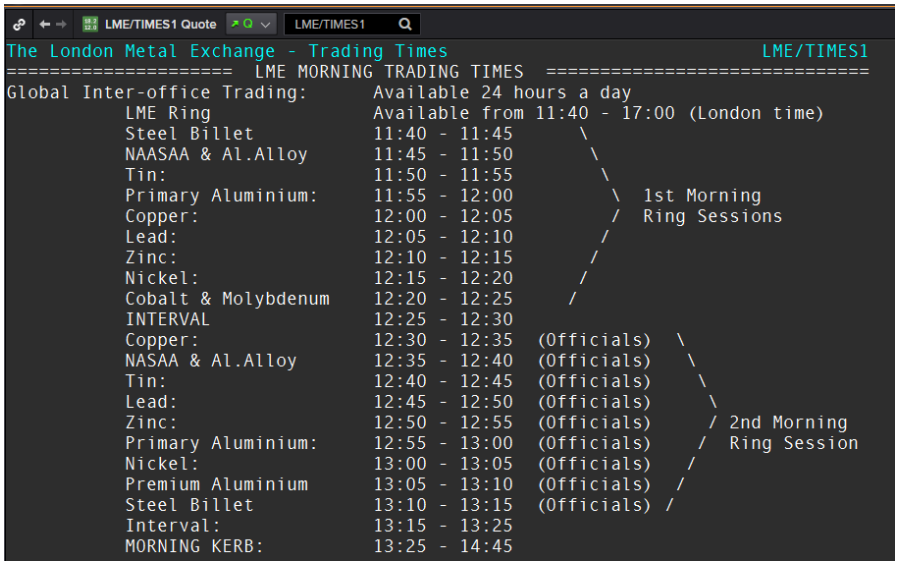
During Ring Trading, an open outcry takes place in a ring where each base metal trades for 5 minutes in the ring, twice in the morning and twice in the afternoon.

The different times for Ring Trading can be obtained through the following steps.

1. Press **F4** to open the quote app

2. Type **<LME/TIMES1>** for the morning ring session timings and **<LME/TIMES2>** for the afternoon timings

Note that other than the 4 ring sessions, there is also something called KERB trading. KERBS are trading periods in between the ring sessions where all metals are traded simultaneously by all traders. This takes place twice a day at 13.25-14.45 and 16.15-17.00.



Inter-Office Trading

This is the 24 hour telephone market ran by LME Brokers

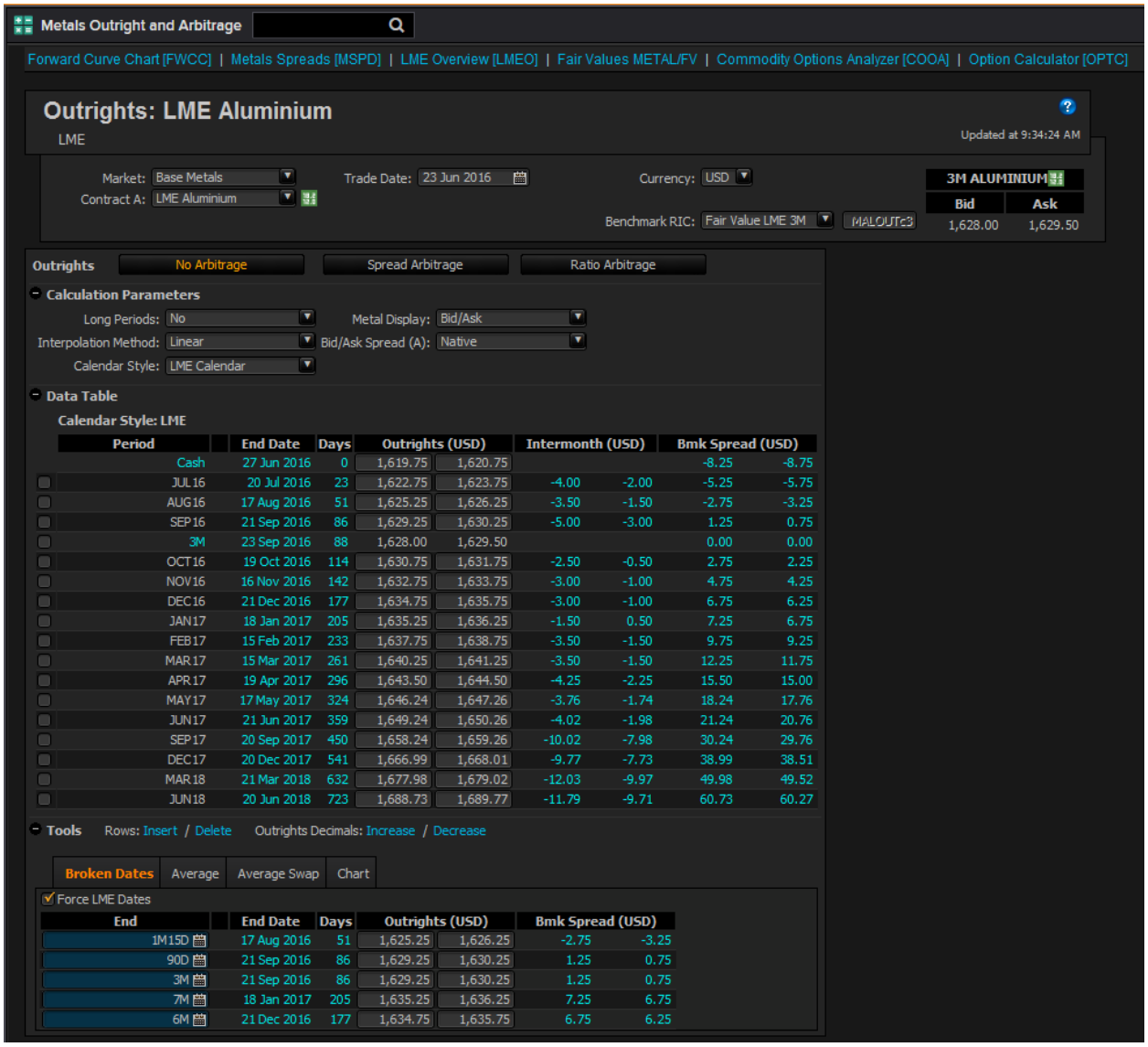
LMEselect Trading

LMEselect is the exchange operated electronic trading platform which operates from 01:00 – 19:00 London Time

6. Metals Outright and Arbitrage <METO>

The Metal Outrights calculator allows users to calculate real-time and historical swap points, cross swap points and outrights for commodity contracts on standard maturities and broken dates. It also calculates forward forwards on broken dates, and pricing, sensitivity, and hedging information for options on commodities contracts.

To arrive at the calculator, simply type **<METO>** in the Eikon Toolbar.



Users may find the METO outlay to be largely similar to that of the SPO application. However, whilst the SPO calculator is limited to calculating swap points and outrights of different currency pairs, the METO calculator is able to calculate arbitrage opportunities of spread and ratio arbitrage. More will be covered within this section.

Calculating Forwards

To utilize the METO calculator for non arbitrage situations, the following information should be specified.

1. Market: Base, Precious Metals or Steel

2. Which contract is being traded.

3. Trade Date

The figures for different periods would be presented. One thing to note is the "BMK Spread" located in the last column. This represents the spread between the 3M forward and the chosen maturity. The 3M forward for commodities is the benchmark rate.

Calculating Arbitrage

When a commodity future is offered on more than one exchange, a trader may be able to earn spread arbitrage by buying the commodity on one exchange and selling on the other. It is also possible to earn ratio arbitrage by buying and selling similar commodity futures in different currencies. For such contracts, METO calculates these two arbitrage amounts and provides a breakdown of the costs involved in making the trade.

Currently, there are 4 contract pairs available for spread and ratio arbitrage.

1. LME Aluminium v SHFE Aluminium

2. LME Zinc v SHFE Zinc

3. LME Copper v SHFE Copper

4. LME Copper v CMX Copper

Note that ratio arbitrage with a commodity is similar to foreign exchange arbitrage since the spread is earned by taking advantage of a difference in the prices of the currencies used by contracts A and B.

Choose: A/B to display the arbitrage as a spread on CurBCurA and vice versa.

Spread and Ratio Arbitrage can only be conducted with Base Metals as Precious Metals and Steel is only available for outright calculations.

Spread Arbitrage

To utilize the METO calculator to calculate spread arbitrage opportunities, the following can be done

1. Set the market to "Base Metals"

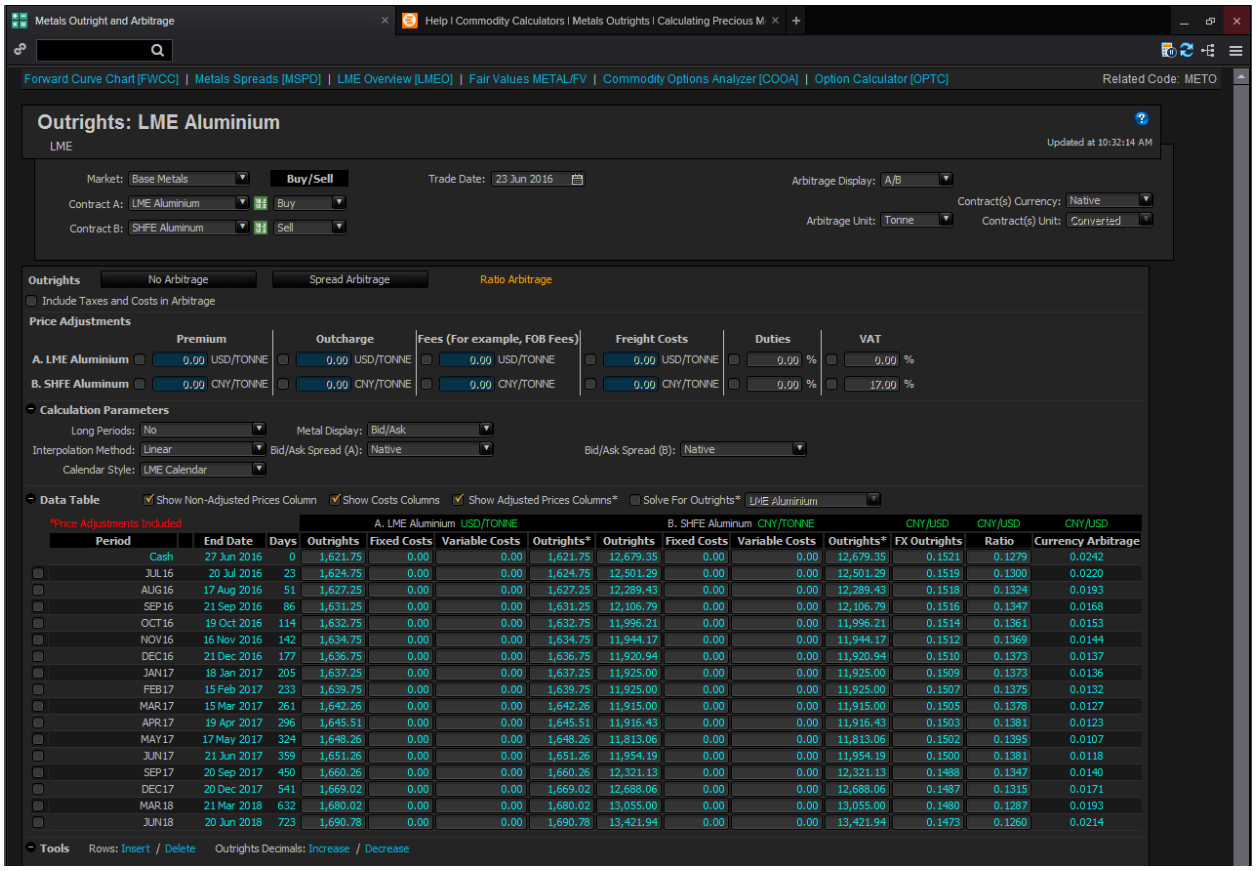
2. Choose the contract you would like to trade

3. Choose the trade date

4. Specify the arbitrage currency

The spread arbitrage would be displayed in the last column.

Ratio Arbitrage



The layout of the spread and ratio arbitrage calculators are similar with the last three columns being absent in the spread arbitrage calculator, instead being replaced by a “Spread Arbitrage” column instead.

To utilize the METO calculator to calculate ratio arbitrage opportunities, the same information should be entered into the calculator.

1. Set the market to “Base Metals”
2. Choose the contracts to be traded
3. Choose the trade date
4. Select whether you want taxes and costs to be included in the arbitrage
5. Include any freight and outright fees.

7. Metals Spreads <MSPD>

Users may utilize the metal spread calculator to hedge or speculate in the commodity market by viewing how the price of 1 metal performs against another. This provides an estimate on future price direction.

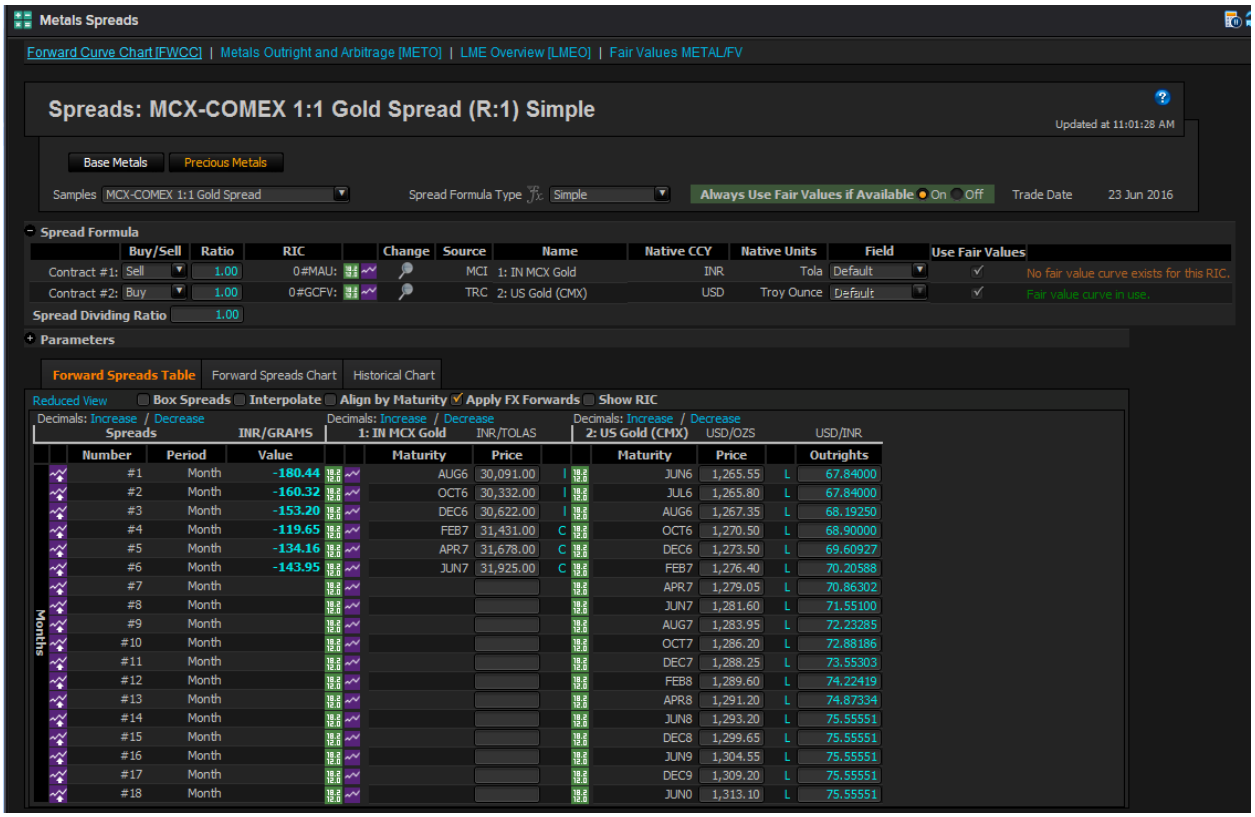
On Eikon, type **<MSPD>** in the Eikon Toolbar to open the calculator to bring up spreads for the following Base and Precious Metals.

Base Metals

1. LME/NYMEX 1:1 Copper Spread
2. NYMEX/SHFE 1:1 Copper Spread
3. LME/SHFE 1:1 Copper Spread
4. LME/SHFE 1:1 Aluminium Spread
5. LME/SHFE 1:1 Zinc Spread
6. Base Metals Intermonth

Precious Metals

1. MCX-Comex 1:1 Gold Spread
2. NYMEX 1:1 Plat/Gold Spread
3. NYMEX 1:1 Silver/Gold Spread
4. TOCOM 1:1 Plat/Gold Spread
5. TOCOM 1:1 Silver/Gold Spread
6. NYMEX/TOCOM 1:! Gold Spread
7. NYMEX/TOCOM 1:! Silver Spread
8. NYMEX/TOCOM 1:! Platinum Spread
9. NYMEX/TOCOM 1:! Palladium Spread
10. Precious Metals Intermonth



1. Specify the Samples that you wish to view the Spread on
2. Choose which contract to buy and sell
3. Hover over the “fx” function to view the formula used (Simple or Complex)

Part 9C: Agriculture Market

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Eikon shortcuts: Agriculture

REAL TIME MONITORING	
COPM	Commodities Prices Monitor
LMEO	LME Overview
OPW	Option Watch
Q	Quote
QL	Quote List
QLI	Quote Line
SDB	Sidebar
TICK	Ticker

NEWS	
NEWS	News
TOPNEWS	Top News
OPECO	Organization of the Petroleum Exporting Countries
CONM	Commodities News Monitor

CHARTING	
SPDC	Commodities & Energy Spread Chart
FWDC	Forward Curve
FWCC	Forward Curve Chart
METO	Metals Outrights

AGRICULTURE	
AGRI	Agriculture Guide
ASPD	Agriculture Spreads
BARLEY	Agriculture – Barley Guide
BIODIESEL	Agriculture – Biodiesel Guide
BIOFUELS	Agriculture – Biofuels Guide
COCOA	Agriculture – Cocoa Guide
COFFEE	Agriculture – Coffee Guide
CORN	Agriculture – Corn/Maize Guide
ETHANOL	Agriculture – Ethanol Guide
FERT	Agriculture – Fertilizer Guide
FORESTRY	Agriculture – Forestry/Fibre Guide
GRAINS	Agriculture – Grains Guide
LIVESTOCK	Agriculture – Livestock/Dairy Guide
OILMEALFEED	Agriculture – Oilseeds/Meals/Feeds Guide
VEGOIL	Agriculture – Other VegOils/ Meals Guide
PALMOIL	Agriculture – Palm Oil Guide
RAPCAN	Agriculture – Rapeseed/Canola Guide
RUBBER	Agriculture – Rubber Guide
SOFTS	Agriculture – Softs Guide
SOY	Agriculture – Soybeans Guide
SUGAR	Agriculture – Sugar Guide
WHEAT	Agriculture – Wheat Guide

ANALYTICS AND CALCS	
ASPD	Agriculture Spreads
AVRG	Average Calculator
CALC	Eikon Calculators
COCM	Commodity Curve Monitor
COSP	Commodity Swaps Pricer
CSPD	Cross-Commodity Spreads
EWIN	Platts eWindow Market Data
MAP	Interactive Map
MSPD	Metals Spreads
POWPJM	Power – PJM
TANK	US Weekly Oil Stocks Estimates (API, EIA)
VOLS	Volatility Surface Calculator
MAPTRK	Interactive Map Asset Tracker
HURRICANE	Hurricane Tracker
CFTC	Commodity Futures Trading Commission
FRGHT	Shipping

SEARCHES	
AGRISRCH	Agriculture – Advanced Search
ANSWERS	Eikon Answers
ENESRCH	Energy – Advanced Search
METSRCH	Metal – Advanced Search
OILREF	Oil Refineries Advanced Search
PHYSICALSRCH	Commodities Physical Assets – Advanced Search
SRCH	Advanced Search
WEATHERSRC	Weather – Advanced Search

HELP	
FAQ	Frequently Asked Questions
HELP	Online Help

1. Overview

Agricultural commodities are the first commodities to have been traded and remain the most important due to man's need for food. Agriculture futures are popular exchange-traded products where two parties take up short (agree to sell) and long (agree to buy) positions.

For example, a farmer would be the holder of a short wheat position (agreeing to sell) and the bread maker could be the holder of the long position (agreeing to buy)

Below are a list of common agricultural products which can be found in Eikon

Types of Agricultural Products	Examples
Grains	Corn Wheat Barley
Softs	Coffee Cocoa Sugar
Oilseeds/Meals/Feeds	Soybean Soybean Oil Soybean Meal
Biofuels	Ethanol
Livestock/Dairy	Cattle/Beef Hog/Pig Milk
Fertiliser	Ammonia Nitrogen Phosphate Potash Sulphur Fertiliser
Forestry/Fibre	Cotton Wool Lumber

2. Product Exchange

Commodity exchanges are exchanges where numerous commodity derivatives are traded. Some exchanges trade in the open outcry style, similar to that of the LME, or electronically.

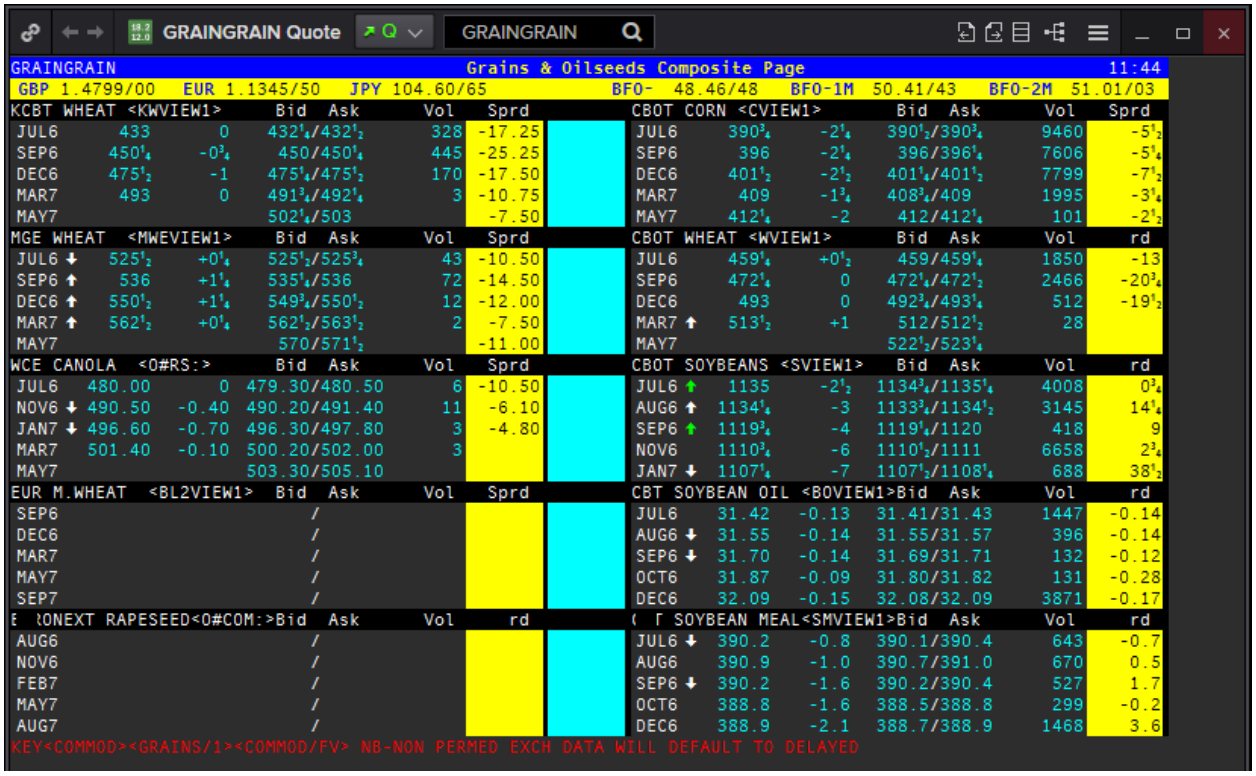
If you go long in the market, you are buying a contract and you expect the price to rise and hence you are considered “bullish”. If you go short, you are selling a particular contract and are expecting the price to fall and thus you are considered “bearish”. To prevent having to meet a contractual obligation, a buyer or seller must liquidate his futures contract and this is known as offsetting a futures position.

Some common agricultural exchanges are CME Group (CBOT, KCBT), Intercontinental Commodity Exchange (ICE), and Tokyo Commodity Exchange (TOCOM) etc.

For example, to obtain a list or quotes for the most liquid futures from CBOT, LIFFE, Minneapolis and ICE Futures Canada, one can,

1. Press F4 to open the quote app

2. Type <GRAINGRAIN> or <GRAINGRAIN2>



When looking at the above prices, one question may come to mind. Why are the prices of the wheat futures traded on different exchanges different in price?

For wheat futures, those traded on CBOT are soft red winter wheat used for biscuits, muffins, cake and cake flour. Those traded on KCBT are hard red winter wheat which is used for bread. Trading in KCBT is less liquid than CBOT. Lastly, those traded on Minneapolis Grain Exchange are hard red spring wheat used for bread and hard baked goods.

Hence, different exchanges may trade different types of product, and thus the prices may vary as a result.

3. Agriculture Fundamentals Database

The Agriculture Fundamentals Database displays reports that show the supply and demand factors affecting the agriculture market. Supply and demand fundamentals correlate directly to the majority market price movements. The Agriculture Fundamental Database provides fundamental data on global agricultural commodity markets supplied by the United States Department of Agriculture (USDA) and retrieved from the World Agriculture Supply and Demand Estimates reports (WASDE).

You can also view crop production data supplied by the National Agricultural Statistics Service (NASS), the Canadian Grain Commission, and U.S. oilseed statistics provided by the National Oilseed Processors Association (NOPA).

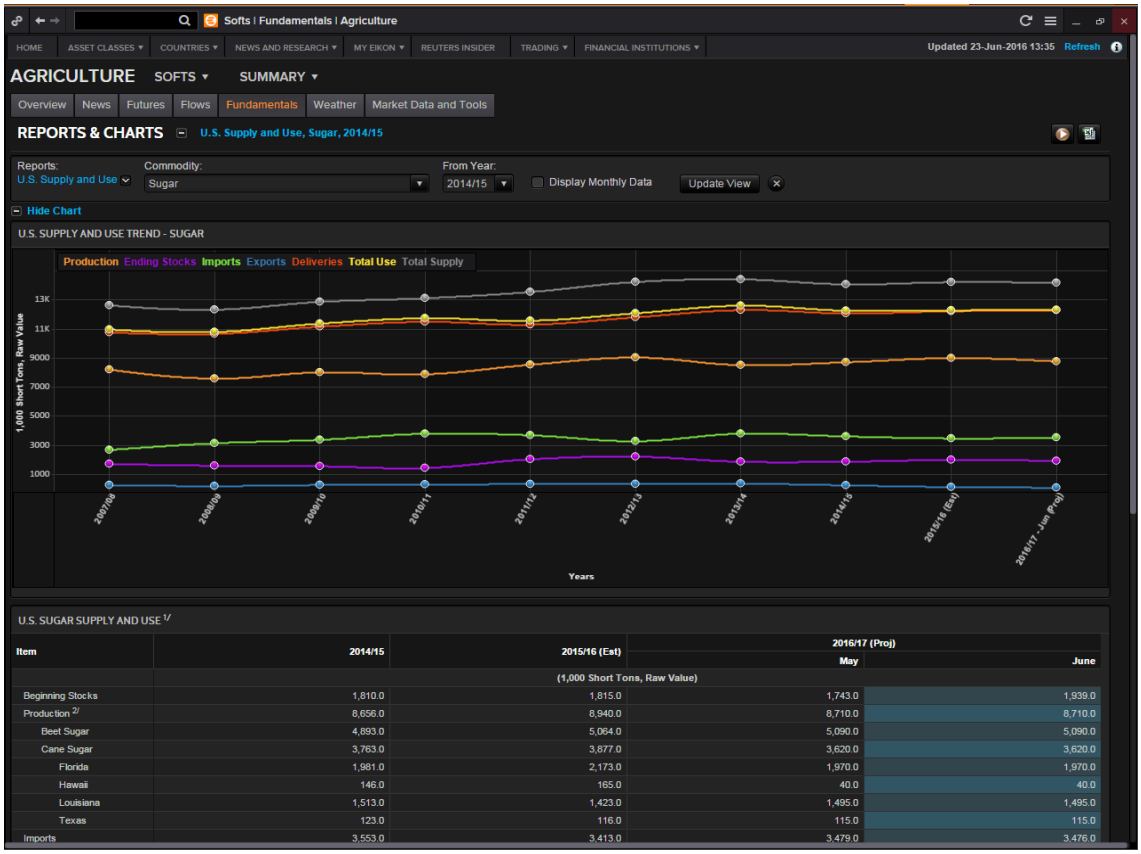
With Agriculture Fundamentals Database, you can view:

- global and US supply and usage
- US quarterly product production and prices
- Chinese import and export totals
- commercial stocks of Canadian grain etc.

To arrive at the page. You can either,

1. Type “Agriculture Fundamentals Database” in the Eikon Toolbar OR

2. Asset Classes>Commodities>Agriculture. Proceed to individual types of agriculture products and click **“Fundamentals”**



4. Research and Forecast

Lanworth

Lanworth crop reports are a bi-weekly fundamental report that allows workflow integration with other data available in Eikon such as real-time, historical, Agriculture Fundamentals Database and shipping content. It provides early season estimates of commodity crop production worldwide. Lanworth methodology includes:

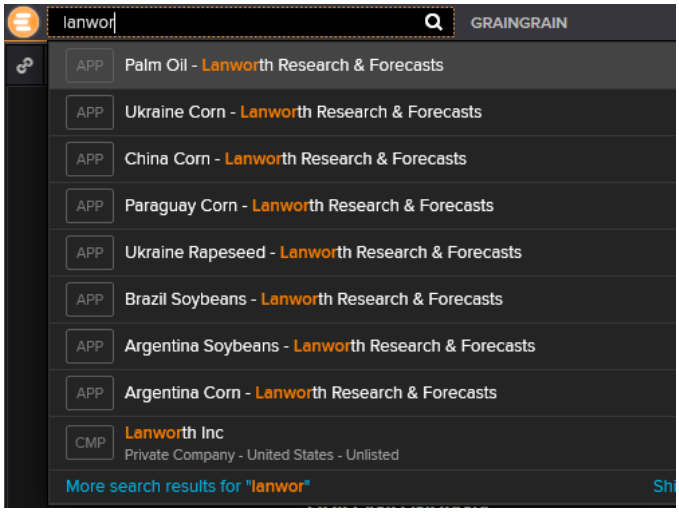
Models – based on farming practices, agronomic fundamentals and forward weather scenarios generating high quality first estimates of planting and production.

Satellite imagery – maps plantings and monitors crop development and production potential over whole countries and regions

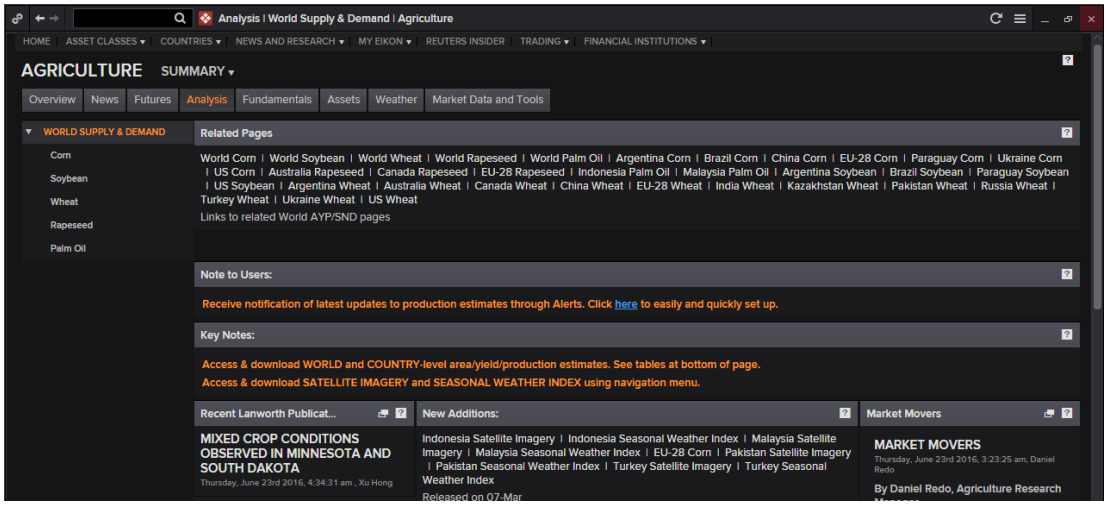
Field investigation – ensures the quality of model outputs and image analyses. Field teams are dispatched globally to validate forecasts.

There are two ways to obtain Lanworth research.

1. In the Eikon Toolbar, search **<Lanworth>** and click on the report needed.



2. Asset Classes> Commodities> Agriculture> Summary> Analysis

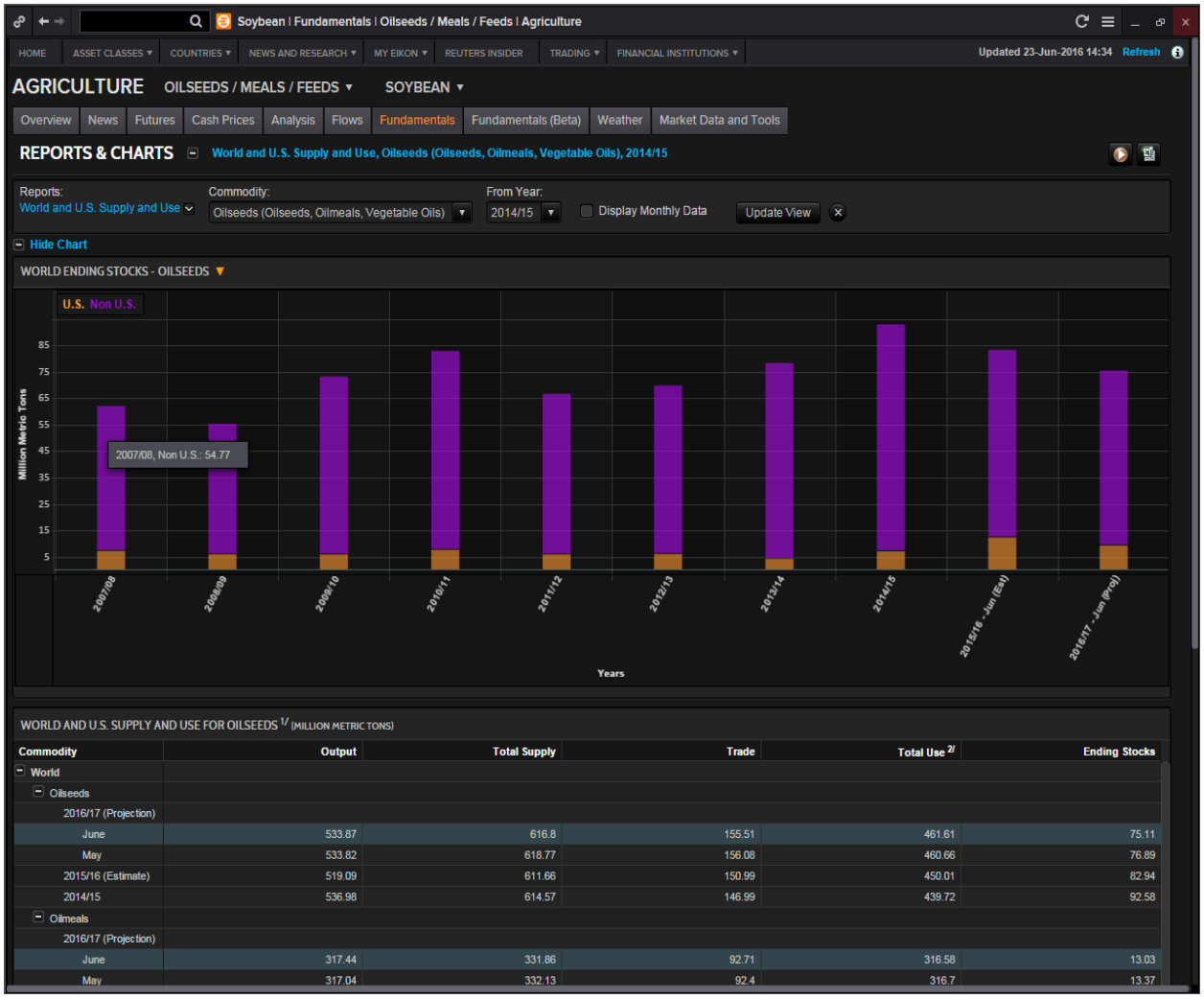


NOPA

Thomson Reuters is the exclusive distributor of US monthly (every 15th of the month) soybean crush data from the National Oilseed Processors Association (NOPA). NOPA data is a key indicator of usage and its potential impacts on the global marketplace. NOPA provides total crushings, soya meal and soya bean oil figures for all US processing states.

The NOPA Data could be assessed by going through the following steps.

Asset Classes> Commodities> Agriculture> Oilseeds/Meals/Feeds> Fundamentals

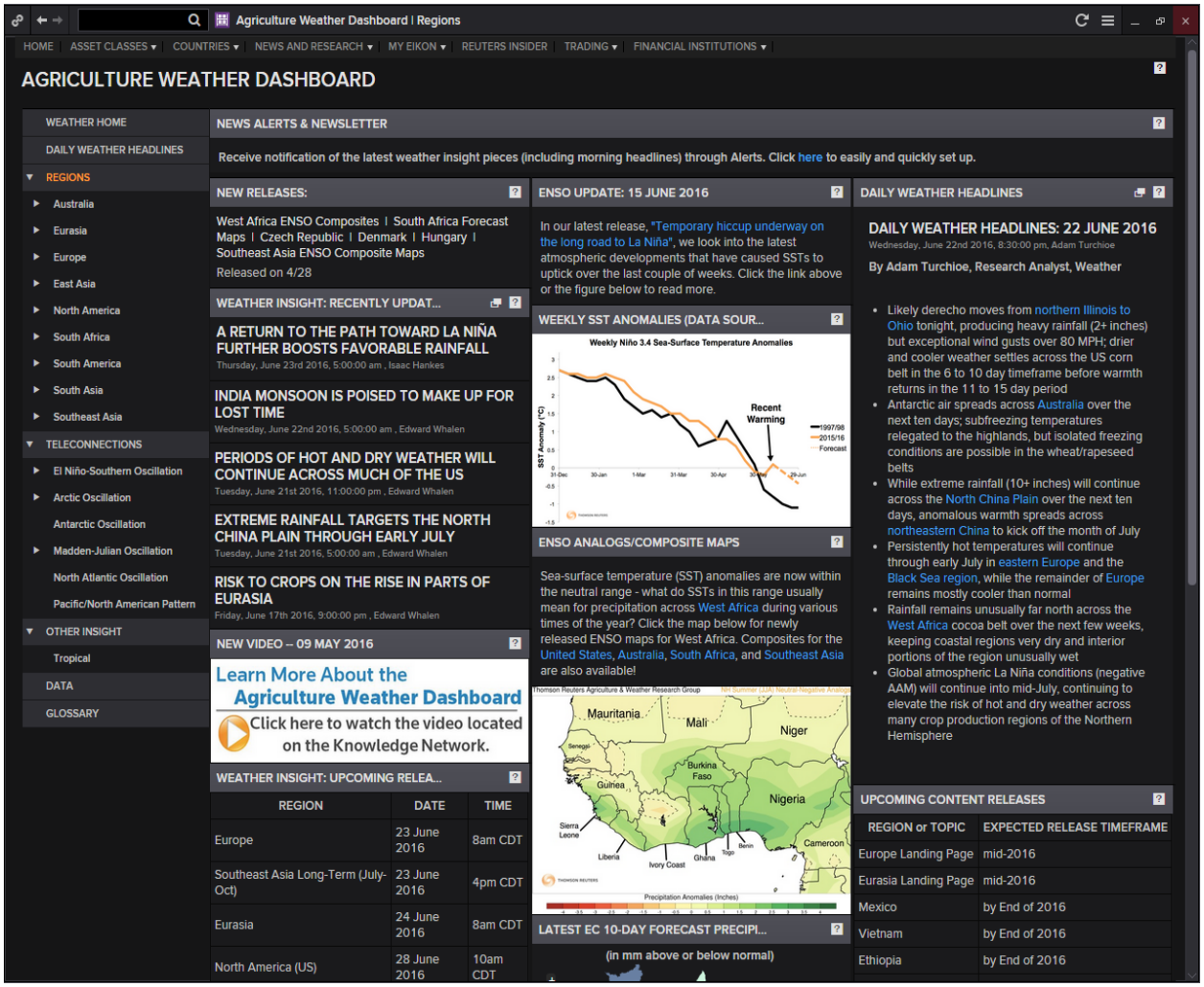


On this page, data can be migrated to Excel. Also, NOPA Crush statistics chart is available and can be edited to display monthly/annual data, date range and category. Real time news is also available.

5. Weather Dashboard

The production and transport of agricultural products is heavily dependent on weather conditions. Weather extremes can have a severe impact on crop yields and in turn the supply, demand and pricing of these commodities could be heavily impacted.

To access the weather dashboard, in the Eikon Toolbar, type **<Agriculture Weather>**.



On this page, you could analyse the weather of different regions around the world as well as to check the patterns of different oscillations (e.g. El Nino, Arctic Oscillation) and its impact on crops.

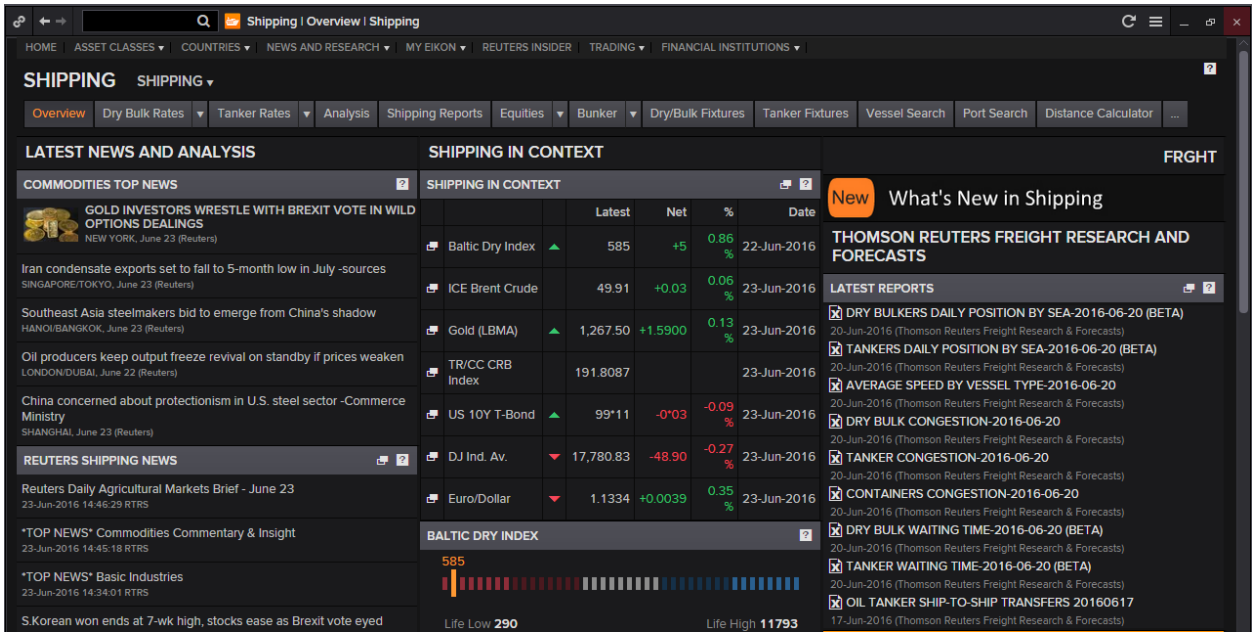
Part 9D: Shipping

1. Overview

Shipping is a sector which is of great importance to all commodity traders. For physical commodities traders, the price of shipping will have a large impact on their potential profit and got trading institutions; shipping is an effective way of analyzing supply and demand.

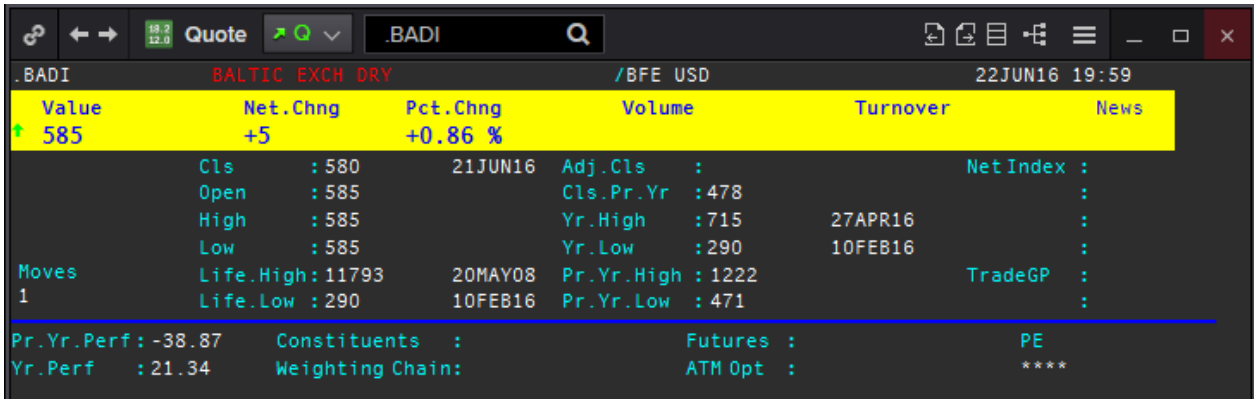
Tracking shipping prices can be done via looking at actual chartered prices or by following shipping indices. A shipping index is similar to an equity index as it provides a view of the overall trend and a historical comparison.

The Shipping Homepage is shown below. Search in the Eikon Toolbar for **<FRGHT>**



The benchmark for shipping indexes is the **Baltic Dry Index**. The Baltic exchange provides both shipping indices and fixture prices. Shipping prices are also provided by Thomson Reuters journalists, and are organized according to commodity, type of vessel and route.

Below is the quote page for the Baltic Dry Index, which can be obtained by pressing F4 to open the quote app and typing **<.BADI>**



2. Shipping Fundamental Database

Within the Shipping Homepage <**FRGHT**>, there are numerous fundamentals data available such as

1. Fixture Data

This is a comprehensive list of vessels information, which includes, who is chartering the vessel, type of vessel, the commodity being transported, where it is and where it is going and the cost for chartering. This data is available on Eikon for Dry/Bulk and Tanker Vessels.

Such information allows customers to identify demand trends and cargo flows to gain a deeper understanding of the supply chain dynamics and explore trading. This can also be used to monitor competitor activity in the market.

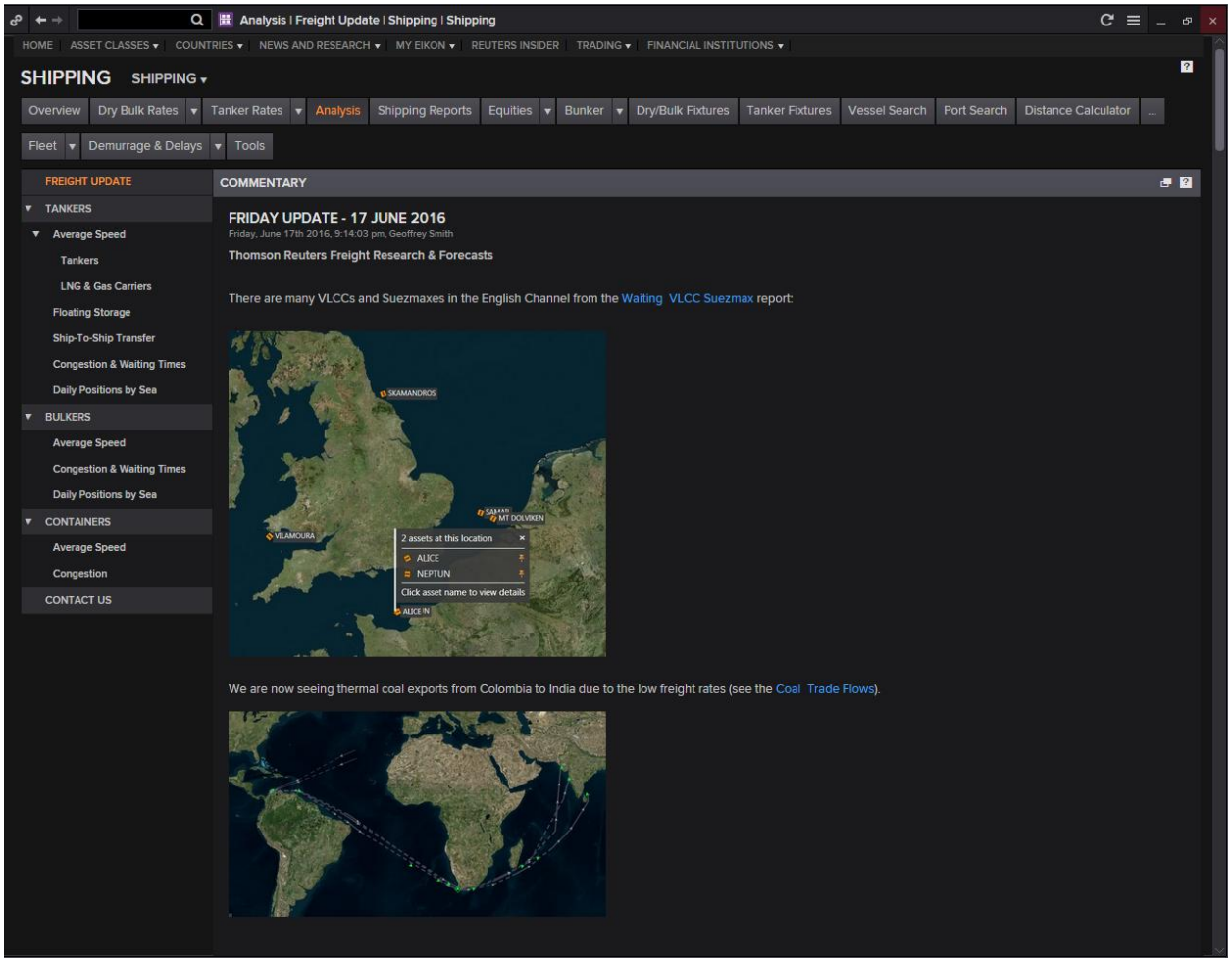
2. Fleet Analysis

This data examines the global fleet capacity with forecasts by integrating vessel deliveries, orderbook for new vessels and expected demolitions

3. Port Activity

This is data regarding vessel queues, line-ups or congestions which can have a direct impact on supply.

Simply click on any tab for more fundamental data available.



3. Research and Forecast

TRADEFLOWS

Tradeflows is a single standard service that will assess the movement of commodities – oil, LNG, coal, iron ore, agricultural products across the globe.

1. Agriculture Flows

This shows you historical cargo level detail of waterborne agriculture products imports and exports. With exclusive research and forecasts from Thomson Reuters agriculture analysts, North American Agriculture Flows will allow you to quickly understand the market and make informed and confident decisions.

Two modules are now available:

- US Bills of lading provides US historical data from US customs.

- Global Port Inspections provides coverage on 31 countries, excluding the US, both historical and future-looking

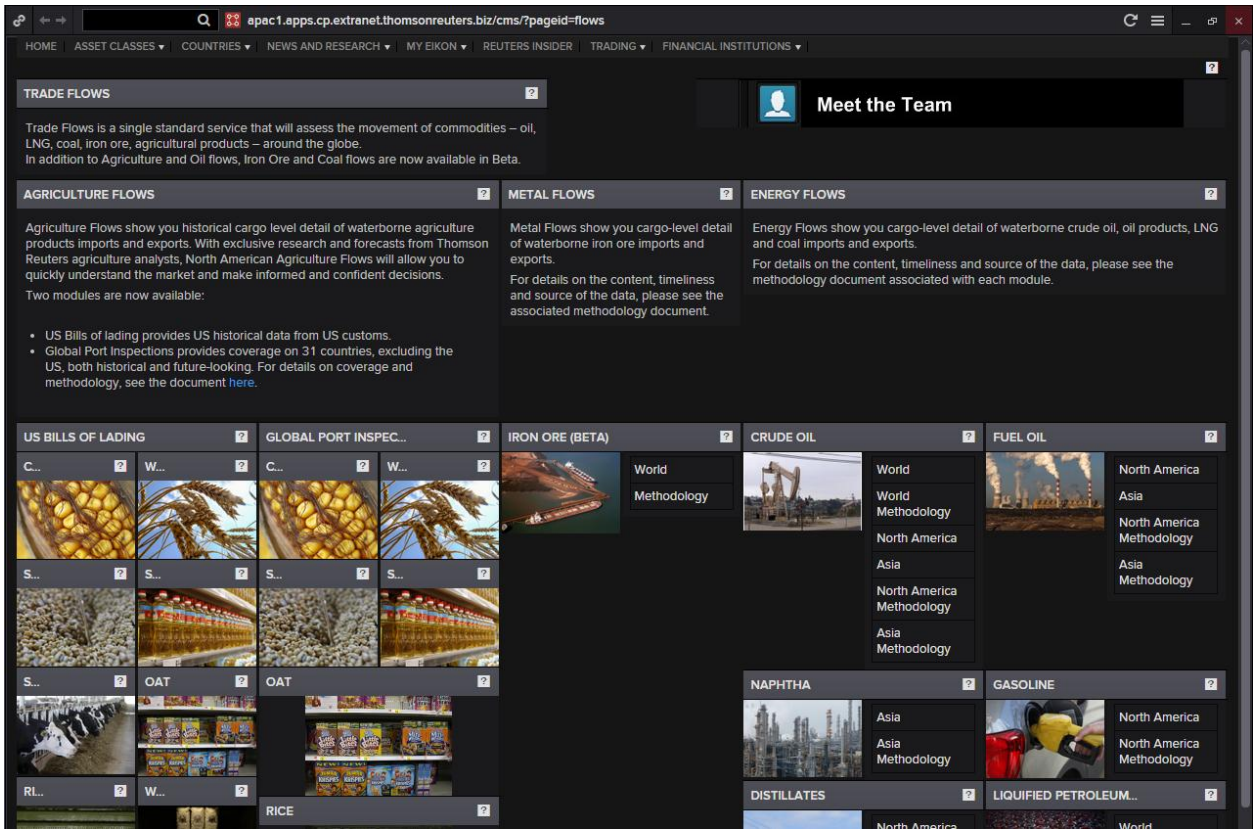
2. Metal Flows

This shows you cargo-level detail of waterborne iron ore imports and exports.

3. Energy Flows

This shows you cargo-level detail of waterborne crude oil, oil products, LNG and coal imports and exports.

To access the page, type **<TRADEFLOWS>** in the Eikon Toolbar.



Part 10: Equities

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Eikon shortcuts: Equities

REAL TIME MONITORING	
BLOT	Blended Order Tracker
BOB	Blended Order Book
BRKS	Broker Statistics
BTAS	Blended Time & Sales
IMO	Index Movers
MON	Monitor
Q	Quote
QL	Quote List
QLI	Quote Line
SDB	Sidebar
SI	My Synthetic Instruments
SNAP	Snapshot
TAS	Time & Sales
TICK	Ticker

CHARTING	
CBOOK	Datastream Chartbook
CHT	Chart app
DSCHART	Datastream Chart Studio
DSLIB	Datastream – My Library
DSNEWS	Datastream News in Charts
ECOC	Economic Indicator Chart
FESC	Fundamentals Estimates Chart
REBC	Rebasing Chart
RRG	Relative Rotation Graph
TEAC	Technical Analysis Chart
VOLC	Volatility Chart
XNET	Datastream Infobase

ANALYTICS & CALCS	
AVRG	Average Calculator
CALC	Eikon Calculators
CONV	Convertible Bond
CORR	Correlation Matrix
DARB	DR Arbitrage
HRA	Historical Return Analysis
IFFV	Index Futures Fair Value
OPR	Option Pricer
OSC	Option Strategy
PAIRS	Pairs Calculator
REGR	Regression Analysis
SARB	Stock Arbitrage
SIGNAL	Signal
SRET	Total Return

MARKETS	
ALPHA	Alpha Now
BIGTR	TR Indices
BIGV	Volatility Indices
EE	Economic Events
HOL	World Exchange Holidays
HOME	Home page
INDUS	Industry
INFOV	World Index Futures – Overview
INOV	World Indices – Overview
MACROX	Macro Explorer
STOV	Stocks Guide

NEWS	
NEWS	News
TOPNEWS	Top News

COMPANY – CONTEXTUAL NAVIGATION Type the company name and the selected tool – e.g. "IBM OV"	
OV	Overview
AQ	All Quotes
ARM	Analyst Revision Model
BAL	Balance Sheet
BUS	Business Info.
CACAL	Corporate Actions Calendar
CAPD	Cpital Change Event Detail
CAPO	Capital Change Overview
CC	Stock Competitors
CDSAQ	CDS All Quotes
CDSCA	CDS Calculator
CDSCHT	CDS Charts
CDSOV	CDS Overview
CDV	Company Deals
CF	Cash Flow
CHTV	Company Chart View
CN	Company News
CRS	Credit Risk – Structural Model (BETA)
CRT	Credit Risk – Text Mining Model (BETA)
CUST	Major Customers
DIVD	Dividend Payment Detail
DIVO	Dividend Overview
DS	Debt Structure
EF	All Futures
EMTO	Most Traded Options
EOP	Options
EQ	Earnings Quality
EST	Statement View
ESTD	Detailed Estimates
EV	Events
EW	Warrant Overview
EXCNV	Exchangeables and CNVs
FIL	Filings
FNOWN	Fund Ownership Summary
FOWN	Firm Ownership Summary
GUID	Guidance Summary
HS	Historical Surprise
IC	Index Competitors
IIS	Interactive Income Statement
INC	Income Statement
INSIDER	Insider / Stakeholder
IR	Issuer Ratings
IV	Intrinsic Valuation
MYN	My News
OFF	Officers & Directors Overview
OFFD	Officers & Directors Detail
OFFP	People Connections
OFFREL	Corporate Relationships
OPM	Operating Metrics
PEERS	Peers
PMO	Price Momentum Model
PP	Price Performance
PTB	Price Target Builder
QH	Quote History
RAT	Ratios – Key Metrics
RATO	Ratios – Overview
RATPVR	Ratios – Profit/Value/Risk
REC	Recommendations & Target Price
RES	Company Research
RV	Relative Valuation
SC	Sector Competitors
SECN	Sector News
SEG	Segments
SH	Smart Holdings Model
SI	Short Interest
TASV	Time and Sales
TOPA	Top Analysts
VWAP	VWAP

EQUITY INDEX – CONTEXTUAL NAVIGATION Note: Type the index name and the selected tool – e.g. "IBM OV"	
CA	Constituent Analysis
CHTV	Index Chart View
EF	All Futures
EOP	Options
EV	Events
EW	Warrant Overview
FIL	Filings
IN	Index News
LJ	Leavers and Joiners
OV	Overview
PP	Index Price Performance
QH	Quote History
RES	Research
RINB	Reuters Investors Briefs

SEARCHES	
ADRSRCH	ADRs – Advanced Search
ANSWERS	Eikon Answers
ECONSRCH	Economic Indicators – Advanced Search
EQSRCH	Companies – Advanced Search
ETFSRCH	ETFs – Advanced Search
FUNDSRCH	Funds – Advanced Search
FUTSRCH	Futures – Advanced Search
MASRCH	Mergers and Acquisitions – Advanced Search
OPTSRCH	Options – Advanced Search
SCREENER	Equity Screener
SRCH	Advanced Search
WARRSRCH	Warrants – Advanced Search
RES	Research

FUNDS – CONTEXTUAL NAVIGATION Type the fund name or identifier and the selected tool – e.g. "QQQ AQ"	
AQ	All Quotes
CHTIP	Indexed Performance Chart
CHTNA	Total Net Assets (TNA) History Chart
CHTPD	Price & Dividend History Chart
CHTPG	Percentage Growth Chart
CHTRE	10,000 Reinvested Chart
CHTRP	Rolling Performance Chart
CHTV	Funds Chart
FHOLD	Fund Full Holdings
HOLD	Fund Holdings
OV	Overview
QA	Quantitative Analysis

HELP	
FAQ	Frequently Asked Questions
HELP	Online Help

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COMMONLY USED CODES: INDICES

INDICES	
CBOE Volatility Index	.VIX
Dow Jones Industrial Average	.DJI
Dow Jones Composite	.DJA
Dow Jones Transports	.DJT
Dow Jones Utilites	.DJU
Dow Jones Total Return	.DJCTR
S&P 100	.OEX
S&P 400 Midcap Equal Weighted Index	.MIDEWF
S&P 500	.SPX
S&P 600 Small Cap	.SPCY
S&P 500 CME Value Index	.IVX
S&P 500 CME Growth Index	.IGX
S&P Total Return	.SPXT
S&P 600 Consumer Discretionary Sector	.SPSMCD
S&P 500 Consumer Staples Sector	.SPLRCS
S&P 500 E-Mini Future	ESc1
S&P 500 Energy Sector	.SPNY
S&P 500 Financial Sector	.SPSY

INDICES (continued)	
S&P 500 Future	SPc1
S&P 500 Health Care Sector	.SPXHC
S&P 500 Industrials Sector	.SPLRCI
S&P 500 Information Technology Sector	.SPLRCT
S&P 500 Materials Sector	.SPLRCM
S&P 500 Telecomm Services Sector	.SPLRCL
S&P 500 Utilities Sector	.SPLRCU
Morgan Stanley Consumer Index	.CMR
Morgan Stanley Cyclical Index	.CYC
US60 Index	.US60
Nasdaq Composite	.IXIC
Nasdaq 100	.NDX
NYSE Composite	.NYA
Thomson Reuters Global Total Return	.TRXFLDGLTU
Russell Top 50	.RU50
Russell 1000	.RUI
Russell 2000	.RUT
Russell 3000	.RUA
Willshire 5000 Index	.W5000
US Dollar	.DXY

INTERNATIONAL INDICES		
FTSE 100	Great Britain	.FTSE
DAX 30	Germany	.GDAXI
CAC 40 INDEX	France	.FCHI
STOXX 50	Europe	.STOXX50
BOVESPA	Brazil	.BVSP
MXSE IPC	Mexico	.MXX
S&P TSX 60	Canada	.SPTSE
NIKKEI 225	Japan	.N225
HANG SENG INDEX	Hong Kong	.HSI
AUSTRALIA ALL ORDS	Australia	.AORD
EURO STOCKS 50	Europe	.STOXX50E
AEX Index	Netherlands	.AEX
RTS Index	Russia	.IRTS
Kospi	South Korea	.KS11
Straits Times Index	Singapore	.FTSTI

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1. Overview

Types of Shares

There are two main forms of stocks that would be of concern to the normal investor.

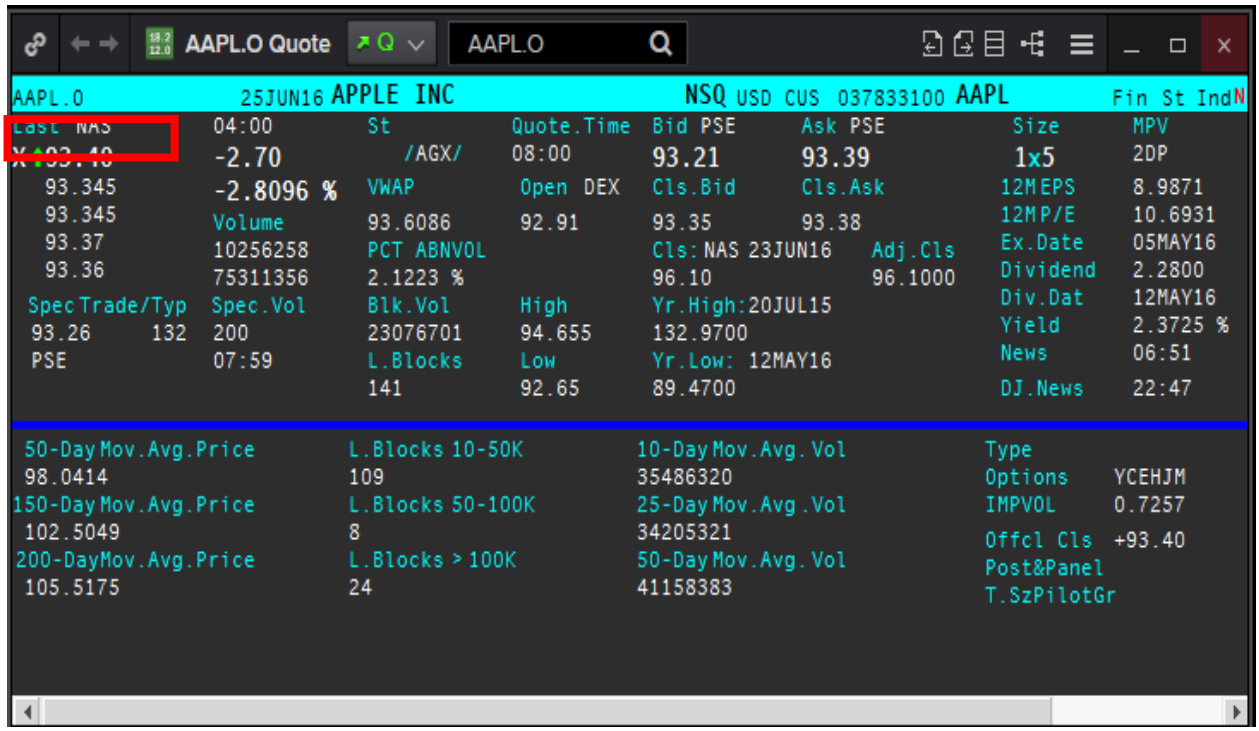
1. Common Stock

These instruments are referred to as ordinary share which represents an investment in the ownership of a company. Holders will be entitled to dividend payments and voting rights. These instruments are held for **capital appreciation** and **dividend payments.**

In order to obtain the current quote price of the equity you are interested in, you could do to the following.

A. Press F4 to open the Quote App

B. Type the company's name/RIC code. (e.g. AAPL.O for Apple)



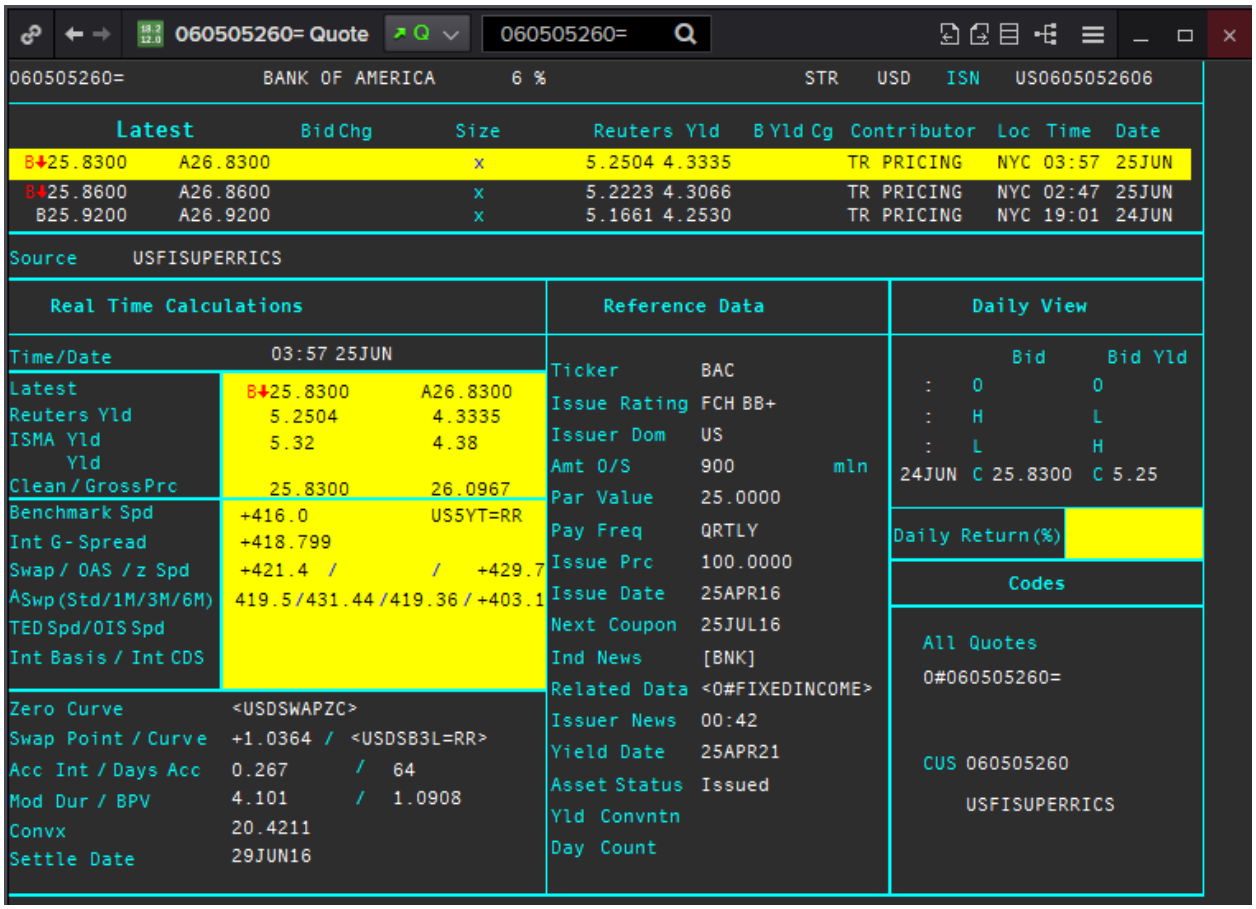
2. Preferred Stock

These instruments confer a degree of ownership in a company, usually comes with a fixed divided payment but without the same voting rights. The structure of a preferred stock is similar to a hybrid of debt and equity. There are a few types of preferred stock; cumulative (accrued dividend); redeemable (callable); convertible (option to convert to common stock); participating.

In order to obtain the quote for preference shares, you could do the following

A: Press F4 to open the quote application

B: Type the name of the company and preference share (e.g. Bank of America preference share)



2. Equity Data Pages

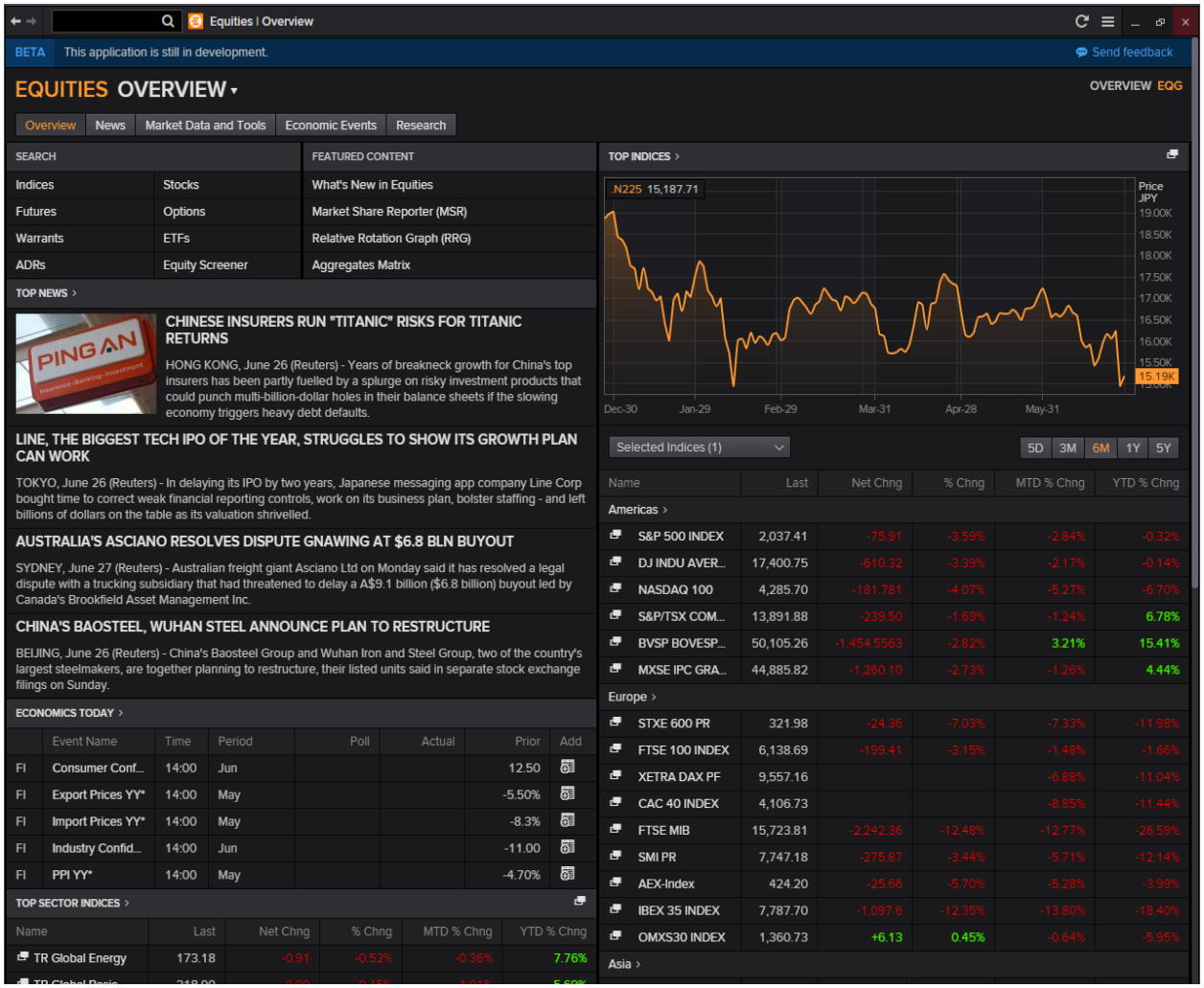
Equity Homepage <EQG>

The first page that you should utilize to obtain information about equities is the Equity Homepage. On this page, you can have a brief overview of the different applications applicable to equities as well as a key list of equity indexes and top news.

To arrive at the following page,

Home> Asset Classes> Equities OR

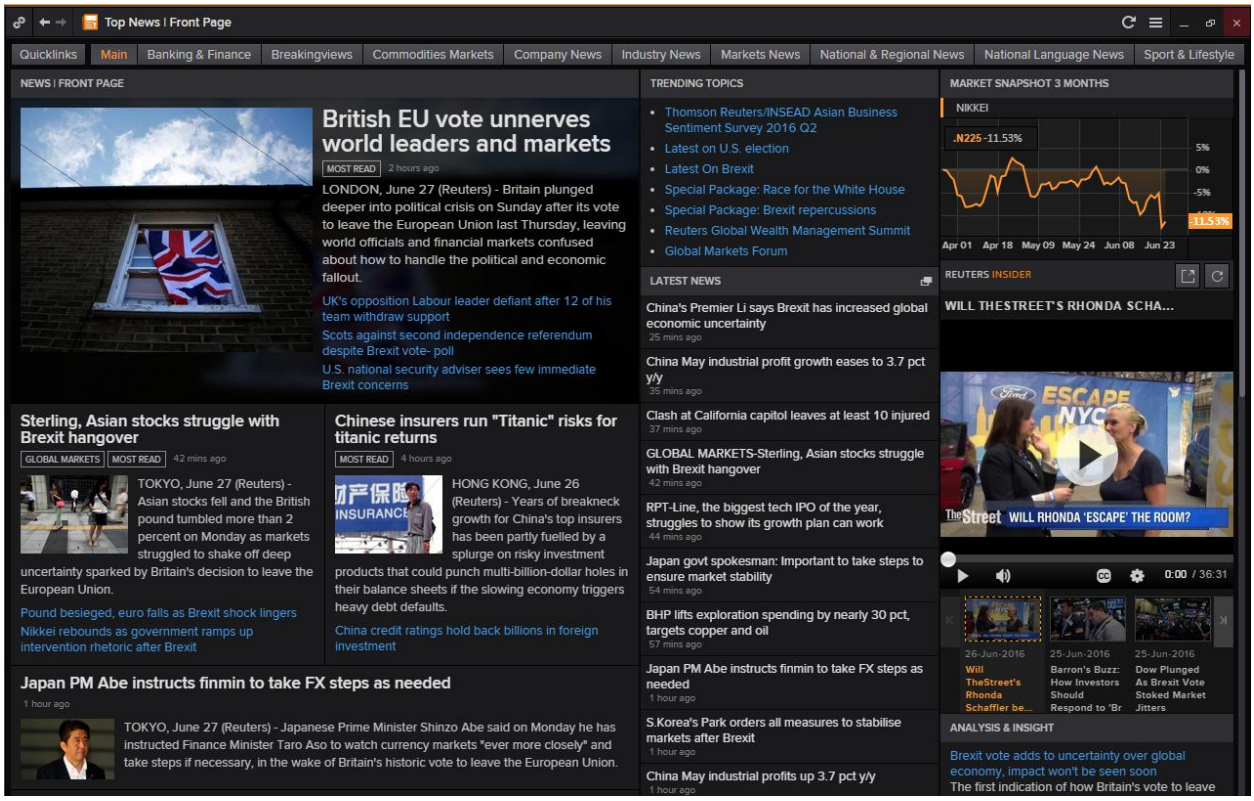
In the Eikon Toolbar, search **<EQG>**



Equity News

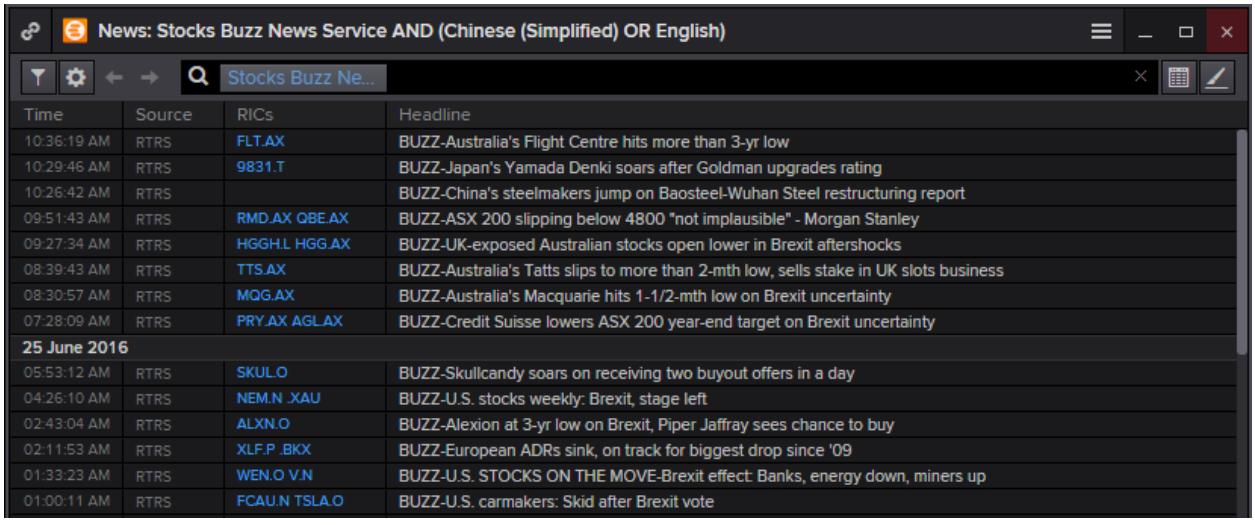
From the Homepage, you can easily navigate to the News and Research tab to read up on the latest news of the market of your choice.

Home> News and Research> Top News



Alternatively, you could go to the Stocks Buzz News Service to have short headlines of the main happenings.

In the Eikon Toolbar, search **<Stocks Buzz>**



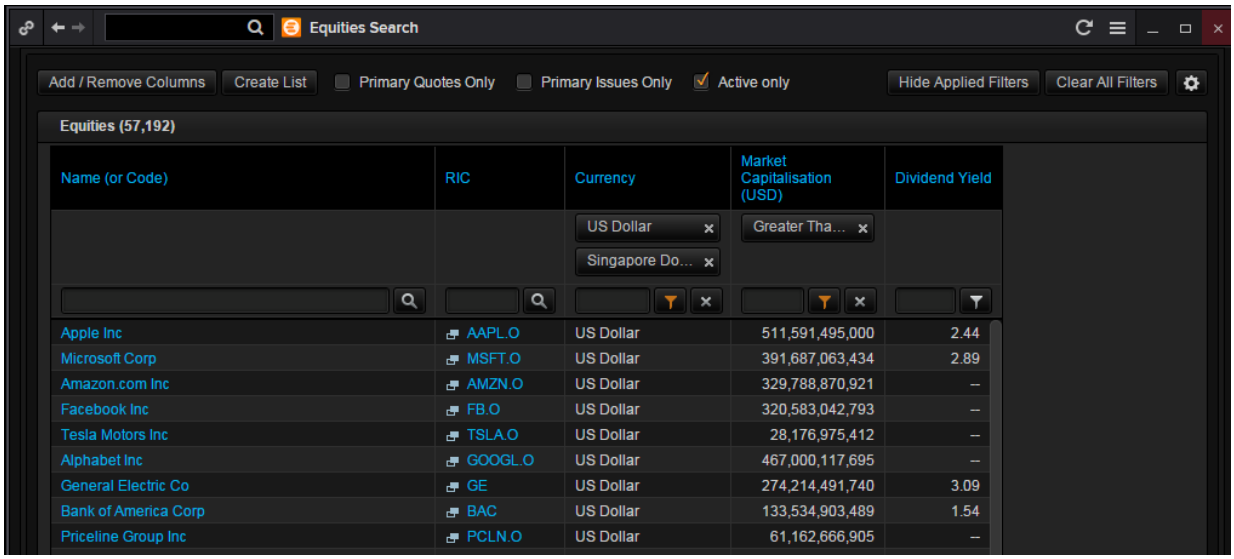
3. Equity Data Search Tools

Advanced Search <EQSRCH>

Using the advanced search tool on Eikon for equities, one can screen out different equity instruments available, according to the different requirements they have stipulated in the filters. After filtering out the different equities, one can sort it (e.g. high to low for dividend yield) for easier search.

In the Eikon Toolbar, type **<EQSRCH>** and hit enter.

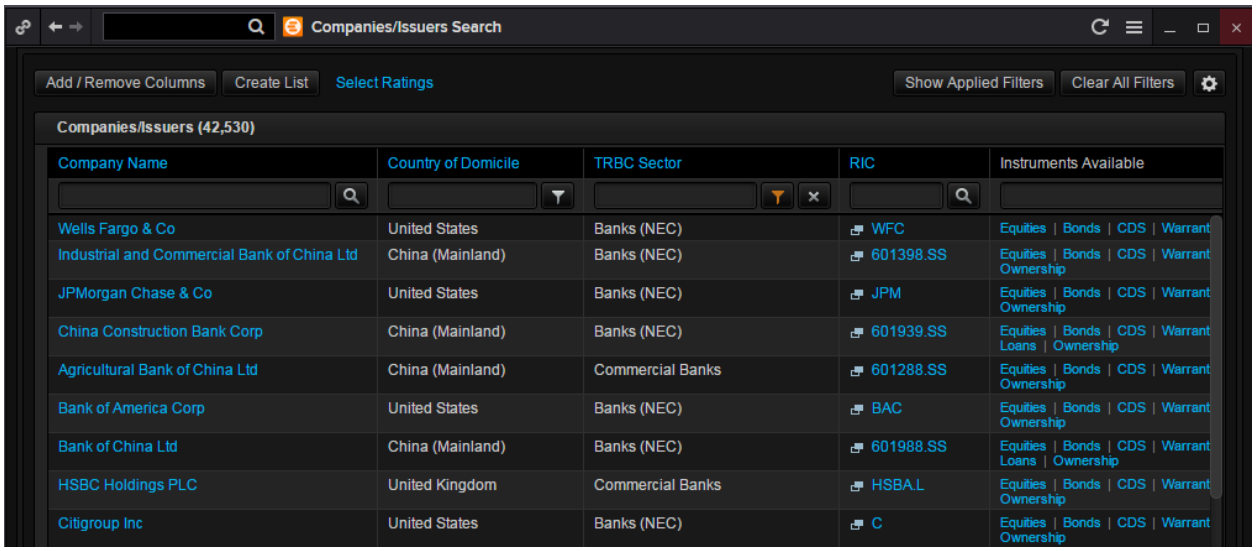
Double click on the name of the issuer to be directed to the company view page.



Advanced Search Companies and Issuers <ORGSRCH>

This application is useful as it allows you to search for un-listed companies (i.e. private companies). From here, you can click on the different type of instruments available from the company/issuer.

In the Eikon Toolbar, search **<ORGSRCH>** and hit enter.

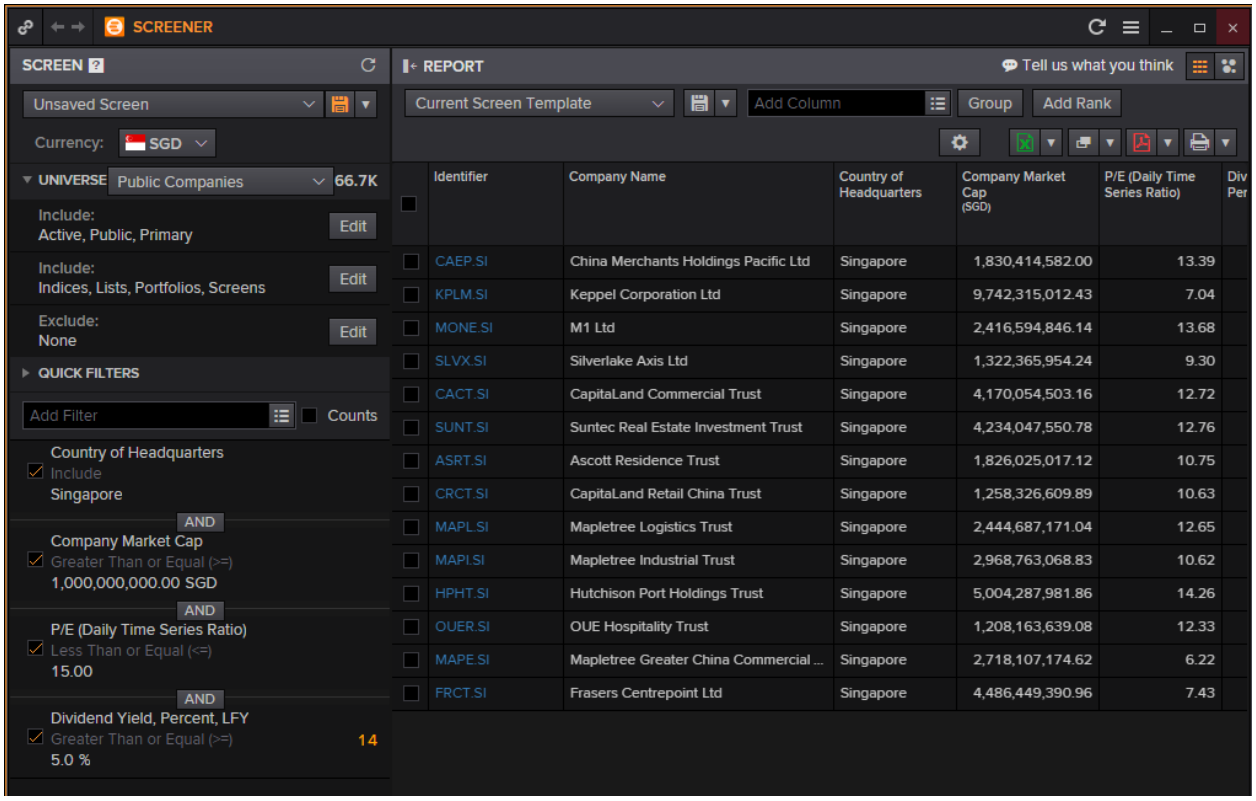


Screener

Another application which the user could utilize to search for equities is the screener app.

Here, you can specify different fields to search for equities and export your results to Excel.

In the Eikon Toolbar, search **<SCREENER>** and hit enter.



As you can see in the leftmost column, you can specify the country of headquarters, P/E, Dividend etc. For commonly used filters, one can utilize the “Quick Filters” function. Alternatively, type in the necessary filter in the search box.

Press the button in green at the top right hand corner to export the table to Excel.

Difference between Advanced Search and SCREENER:

Using the screener, one is able to

1. Filter more fields (such as IBES, Starmine, and Technical Analysis etc)
2. Set your own universe (portfolio) of stocks that you wish to look into
3. You can add columns to display the result with further data
4. Data can be displayed in a scatter plot format
5. The results can be exported to Excel.

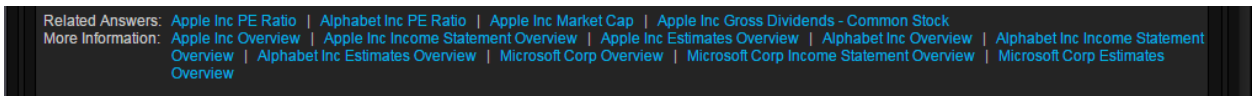
These are functions not available with the EQSRCH and ORGSRCH applications.

Eikon Answers

Using Eikon Answers, one can conduct a natural language search which can provide direct answers to your questions pertaining to equity and equity indices and its respective Technical and Fundamental ratios.

E.g. Searching for “Apple vs. Microsoft vs. Google Stock Price 2012 to 2015, EPS, Dividend” in the Eikon Toolbar would generate the following page with the corresponding visual charts.

After scrolling down past the results, you would see the following option bar.



Using these links, the Answer Application provides you with links to information or searches that it deems would aid you, thus creating an easy and quick way for you to search for correlated information without having to search for it again.

Further down the page are direct links to the company overview, futures and equity products available, as well as top news from the past day.

Equity Offering Apps <IPO>

IPO Process

In order to carry out an IPO, the following steps must be taken by a company.

1. Pitch: bankers from many firms will pitch themselves to become book runner roes

2. Kick-off meeting: meeting for everyone (company management, auditors, accountants, underwriting banks, lawyers etc) involved in the IPO to get together

3. The S-1 filing (For US only): SEC filing used by companies to register their securities with SEC

4. Pre-selling the offering: a pre-IPO analyst meeting

5. Roadshow: meet with investors and market the company for 1-2 weeks

6. Pricing meeting: decide on the final price of the deal based on the orders received

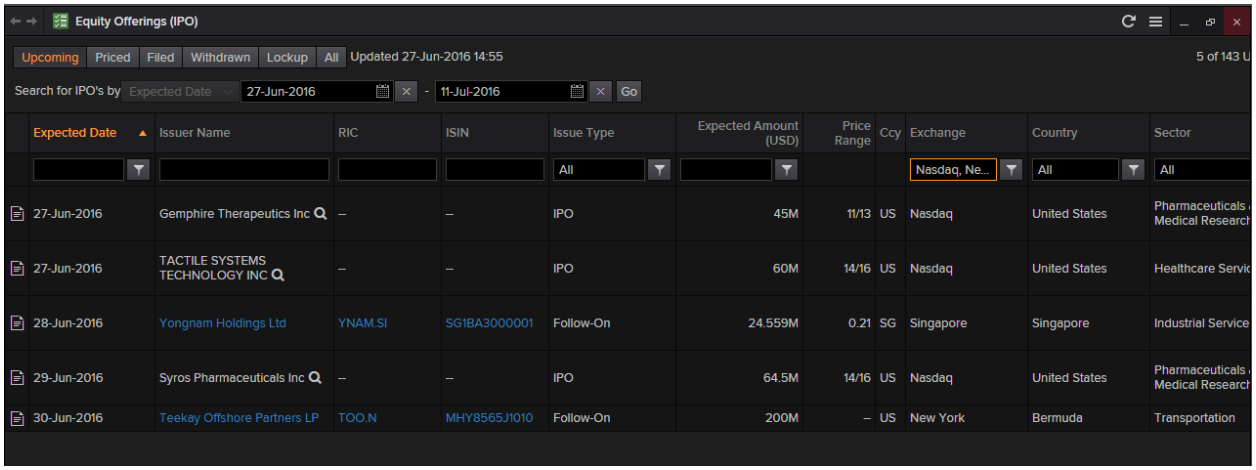
7. Allocation: the syndicate of banks will allocate shares to investors

8. Trading: the stock starts trading and the general public can now buy and sell shares.

EIKON Application

On Eikon, there is an app which would list all IPOs, and here, all IPOs two weeks forwards and historical IPOs can all be accessed.

On this page, you could specify the expected date of IPO, including the exchange and country that you are interested in. Specific sectors can also be viewed.



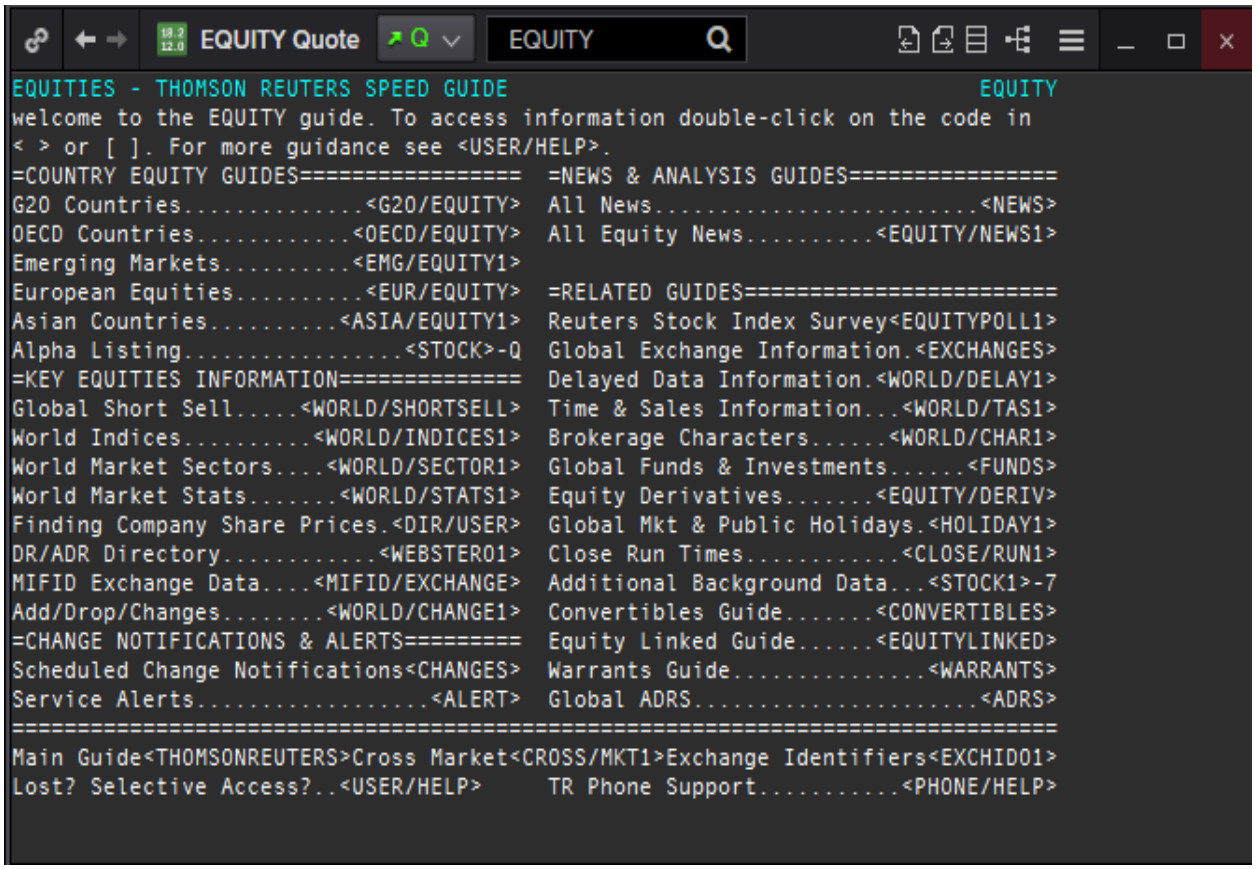
Equity Speedguides

Within the Quote app, there are speedguides which provide a menu based approach to searching for data. Here, main headings would allow you to navigate to other pages which could lead to further searches.

The speedguide for equity could be accessed through the following steps.

1. Press F4 to open the quote application

2. Search **<EQUITY>** and the following page will appear.



On this page, you could be linked to the different guides related to equity instruments such as the equity instruments of G20, OECD and Emerging markets.

Occasionally, you may be faced with having to scroll through different pages as the country you are searching for <XXXX/1> to <XXXX.2>

4. Charting for Equities

Basic Charting

In order to plot the basic chart of an equity's price, there are 2 ways to do so.

1. Use the Chart App

Press F10 to open the Chart app. Subsequently, enter the RIC or search for the company's name in order to plot the price of the chart.

2. In the Company Overview page, select "Price and Charts" for a chart representation of the equity

Some Common Technical Analysis

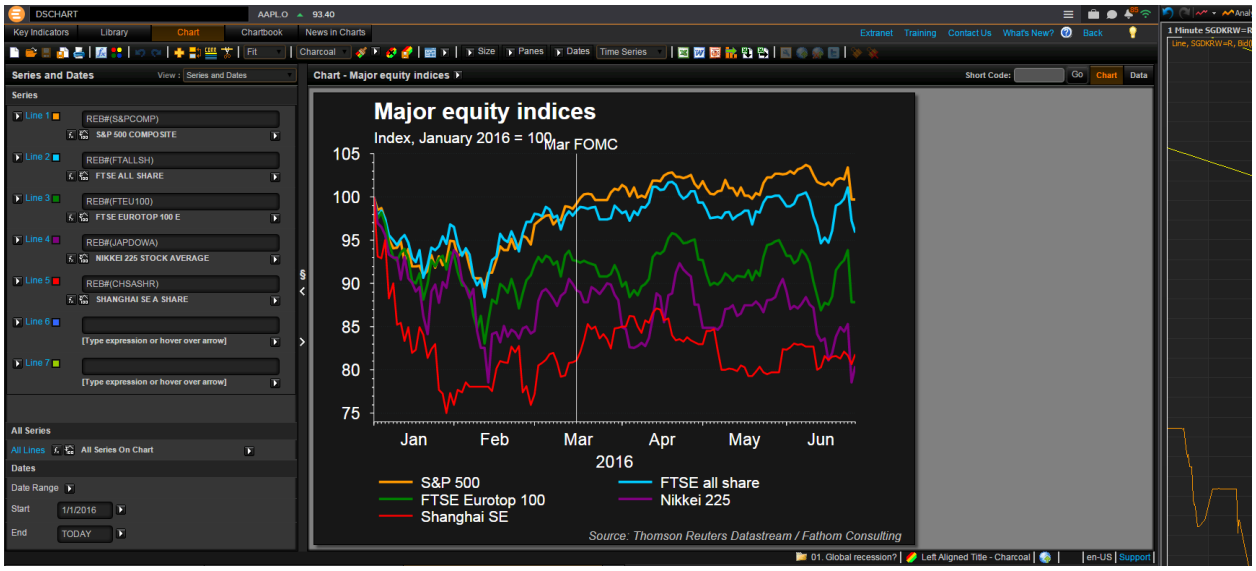
There are certain technical analyses for Equities

- Simple Moving Average
- Bollinger Bands
- Volume
- Relative Performance
- Rebasing

Pre-defined Charts in the Chart Application

Within the DataStream Chart Library application in Eikon, there are some pre-defined charts which could be useful for you when charting economic indicators as well as different types of equity instruments.

In order to access this page, you would type <DSCHART> in the Eikon Toolbar and click on the "Chartbook" tab at the top. This would lead you to the page of chart templates which you can use and modify for your usage.



5. Country Overview

Before investing in an equity, some investors may conduct a simple research about the Country of Exchange. In order to do so, there is a straightforward way to obtain a wholesome view of the country's financial status.

Through the country overview page, you could obtain

1. Country's Currency and Equity Index
2. Issuer Ratings
3. Key News and Events
4. Financial Markets
5. Central Bank
6. Amount of Debt
7. Key Economics
8. Comparison with other Countries
9. Key Information about Leadership in the Country

In order to open the country overview for any one country, simply search the country's name in the Eikon Toolbar. E.g. Search for "Singapore"

6. Company Overview

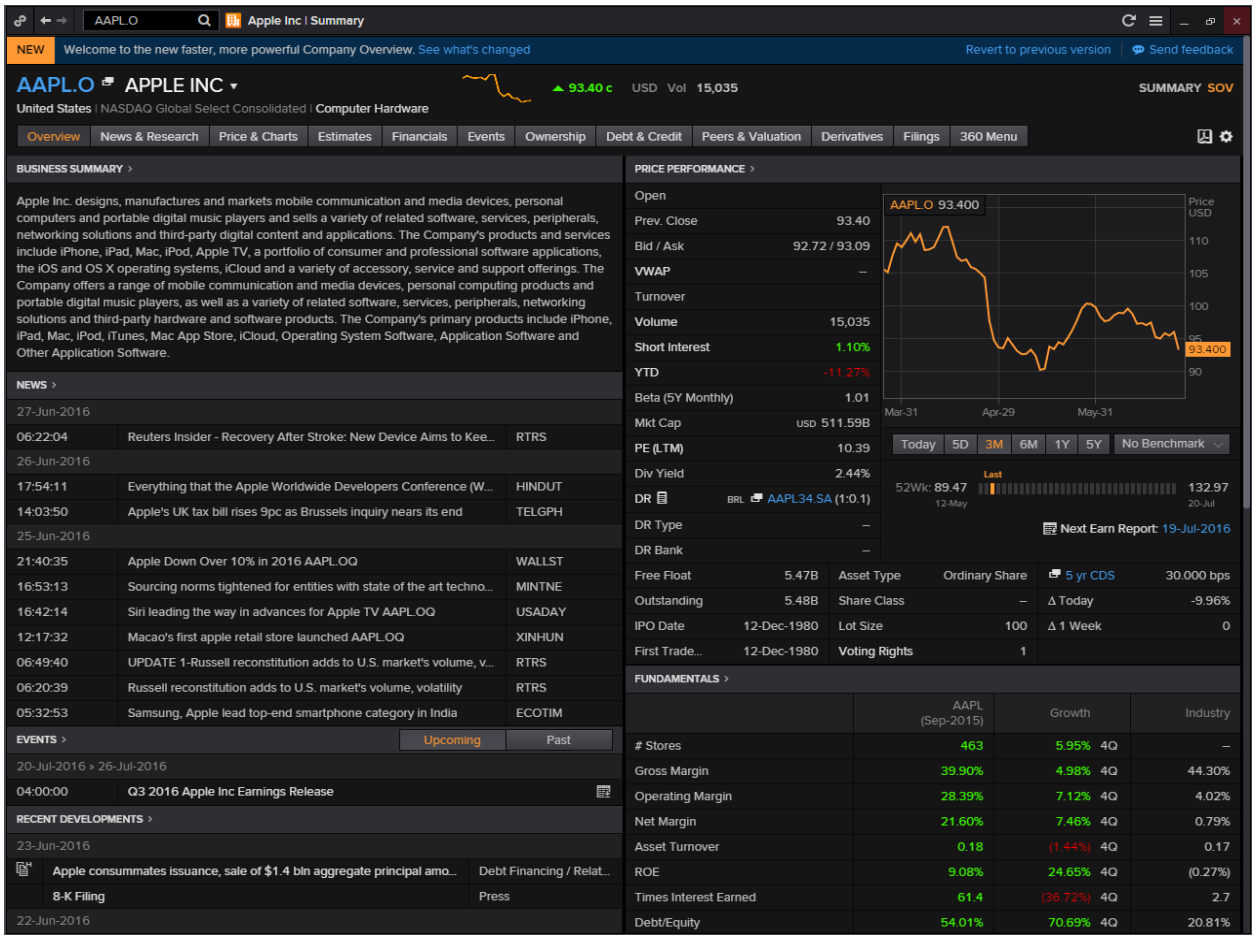
Overview

The Company Overview page in Eikon provides access to fundamentals, estimates, research, events, significant developments and background information on companies. It gives a comprehensive overview of a stock in order for users to determine its health and the overall state of the equity instrument.

For the purpose of discussion, we have chosen to use Apple (AAPL.O) for discussion. Type the company name or ticker into the Search box and select from the Auto suggest options presented to you. (E.g. Apple or AAPL.O)

From the overview page, the following pages can be accessed,

1. Summary about the instrument
2. Stock Valuation
3. Fundamentals
4. Trading
5. Private Equity
6. Takeover Defence
7. Information about Officers



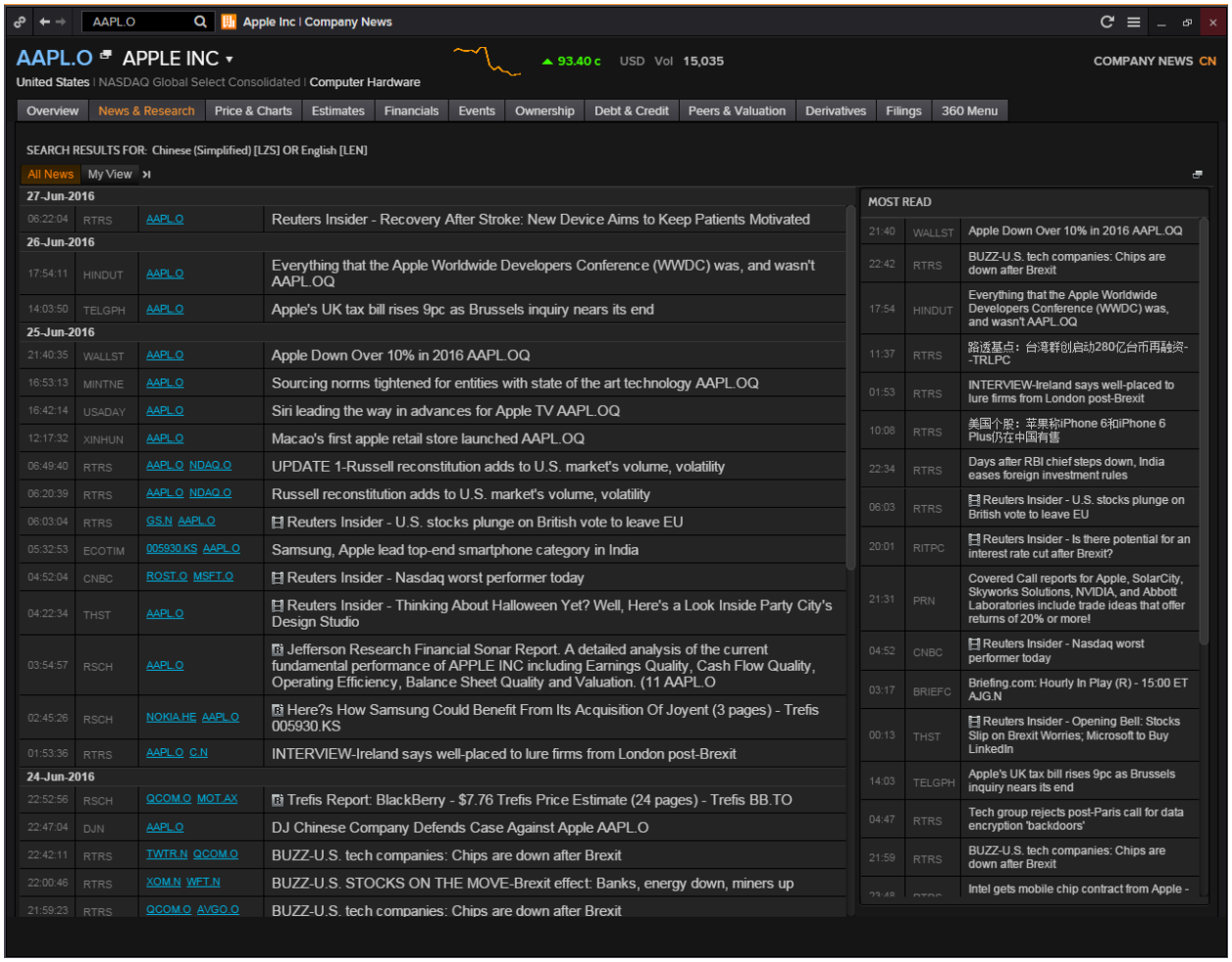
News and Research

Within the Company Overview Page, the “News and Research” tab would provide users with a list of news from the past few days that relates to the equity you are searching on.

On the right hand column, Eikon has generated a Most Read list that would allow you to screen through the different headlines that others found important or interesting.

Within the News and Research tab, you could access the following information

1. Company News
2. My View
3. Social Media Monitor
4. Sector News
5. Reuters Investor Brief
6. Company Research



Going to the “My Views” tab would allow you to add specific news sections that you wish to search on based on companies, markets, business sectors, geographies etc.

Clicking on the logo would allow you to search individual news that you wish to find, or to search news based on a specific time on a date. This would allow you to search on events or news that make have caused significant movements in stock prices at that time.

Price and Charts

The next tab is for information about “Prices and Charts”

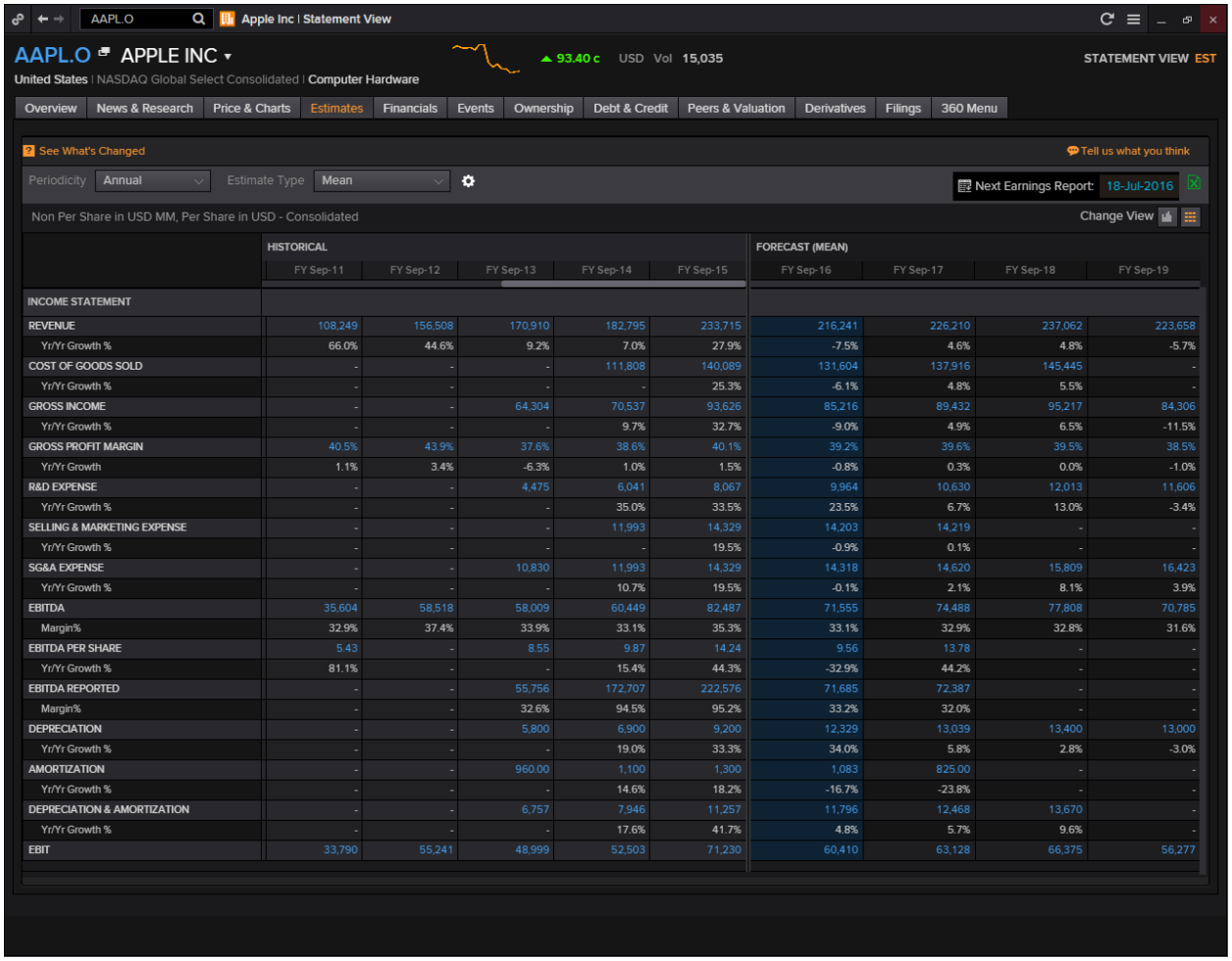
1. Time and Sales
2. Autex Liquidity: Indicates the market liquidity by connecting traders to those on the bid/ask side
3. Quote History
4. Price Performance
5. Price Momentum Model
6. All Quotes
7. Short Interest: Quantity of active short positions
8. VWAP: volume weighted average price
9. 10B-18: Based on SEC Rule 10B-18 which allows companies to repurchase stocks subject to conditions
10. Chart
11. Chart Studies

By clicking on the small “+” next to the frequency on the chart, you are able to add in other price series, spreads and ratios, technical analysis, economic indicators, fundamental data, estimates and mark out key events. It is similar to the F10 chart function.

Estimates

The “Estimates” tab on Eikon provides users with different estimates about a company.

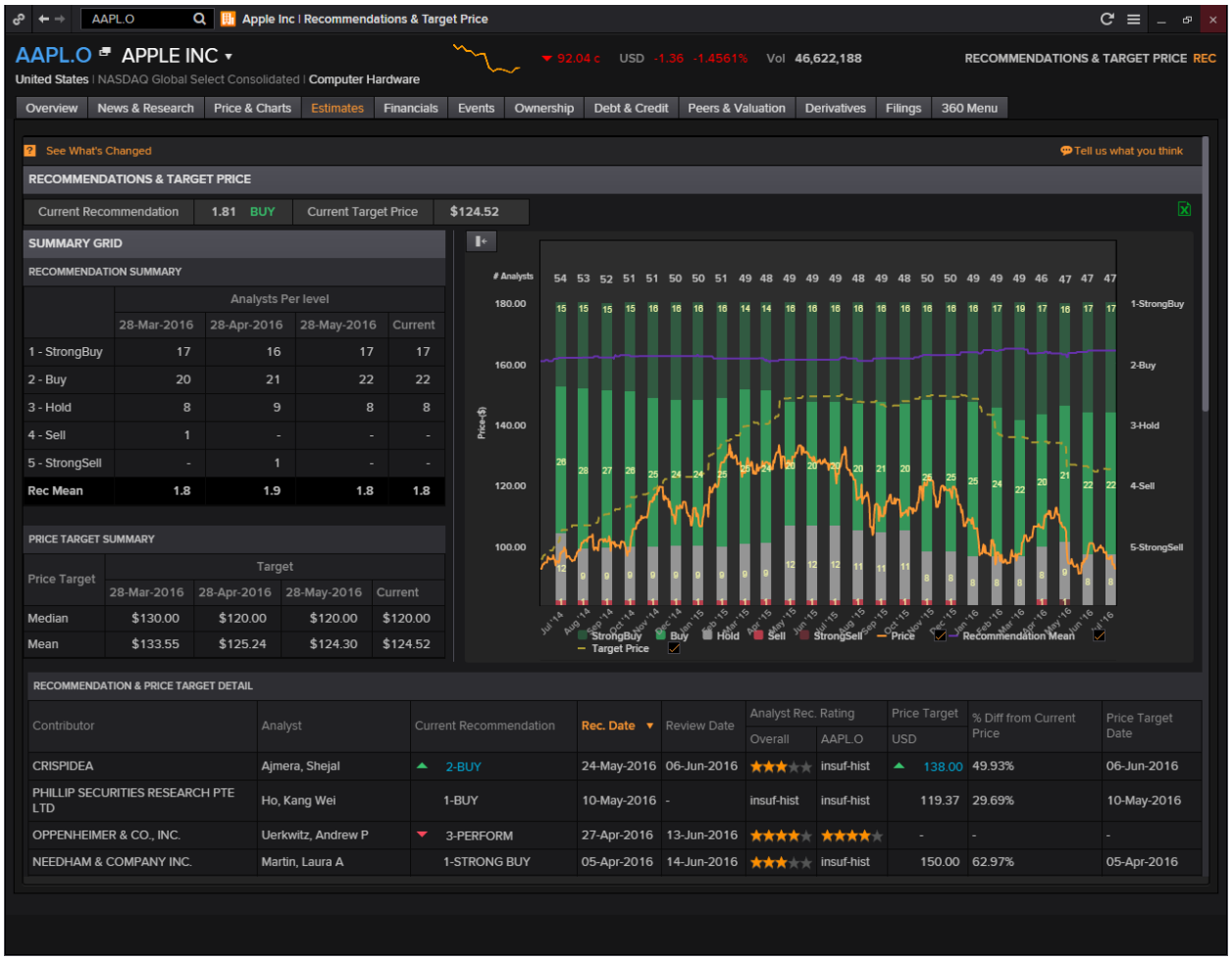
1. Statement View
2. Detailed Estimates
3. Recommendations and Target Price
4. Historical Surprise
5. Guidance Summary
6. Top Analysis
7. Analyst Revisions Model
8. Interactive Income Statement



	HISTORICAL					FORECAST (MEAN)			
	FY Sep-11	FY Sep-12	FY Sep-13	FY Sep-14	FY Sep-15	FY Sep-16	FY Sep-17	FY Sep-18	FY Sep-19
INCOME STATEMENT									
REVENUE	108,249	156,508	170,910	182,795	233,715	216,241	226,210	237,062	223,658
Yr/Yr Growth %	66.0%	44.6%	9.2%	7.0%	27.9%	-7.5%	4.6%	4.8%	-5.7%
COST OF GOODS SOLD	-	-	-	111,808	140,089	131,604	137,916	145,445	-
Yr/Yr Growth %	-	-	-	-	25.3%	-6.1%	4.8%	5.5%	-
GROSS INCOME	-	-	64,304	70,537	93,626	85,216	89,432	95,217	84,306
Yr/Yr Growth %	-	-	-	9.7%	32.7%	-9.0%	4.9%	6.5%	-11.5%
GROSS PROFIT MARGIN	40.5%	43.9%	37.6%	38.6%	40.1%	39.2%	39.6%	39.5%	38.5%
Yr/Yr Growth	1.1%	3.4%	-6.3%	1.0%	1.5%	-0.8%	0.3%	0.0%	-1.0%
R&D EXPENSE	-	-	4,475	6,041	8,067	9,964	10,630	12,013	11,606
Yr/Yr Growth %	-	-	-	35.0%	33.5%	23.5%	6.7%	13.0%	-3.4%
SELLING & MARKETING EXPENSE	-	-	-	11,993	14,329	14,203	14,219	-	-
Yr/Yr Growth %	-	-	-	-	19.5%	-0.9%	0.1%	-	-
SG&A EXPENSE	-	-	10,830	11,993	14,329	14,318	14,620	15,809	16,423
Yr/Yr Growth %	-	-	-	10.7%	19.5%	-0.1%	2.1%	8.1%	3.9%
EBITDA	35,604	58,518	58,009	60,449	82,487	71,555	74,488	77,808	70,785
Margin%	32.9%	37.4%	33.9%	33.1%	35.3%	33.1%	32.9%	32.8%	31.6%
EBITDA PER SHARE	5.43	-	8.55	9.87	14.24	9.56	13.78	-	-
Yr/Yr Growth %	81.1%	-	-	15.4%	44.3%	-32.9%	44.2%	-	-
EBITDA REPORTED	-	-	55,756	172,707	222,576	71,685	72,387	-	-
Margin%	-	-	32.6%	94.5%	95.2%	33.2%	32.0%	-	-
DEPRECIATION	-	-	5,800	6,900	9,200	12,329	13,039	13,400	13,000
Yr/Yr Growth %	-	-	-	19.0%	33.3%	34.0%	5.8%	2.8%	-3.0%
AMORTIZATION	-	-	960.00	1,100	1,300	1,083	825.00	-	-
Yr/Yr Growth %	-	-	-	14.6%	18.2%	-16.7%	-23.8%	-	-
DEPRECIATION & AMORTIZATION	-	-	6,757	7,946	11,257	11,796	12,468	13,670	-
Yr/Yr Growth %	-	-	-	17.6%	41.7%	4.8%	5.7%	9.6%	-
EBIT	33,790	55,241	48,999	52,503	71,230	60,410	63,128	66,375	56,277

From the Statement Views page, you can get historical data for the past 5 years and it may feature data for the next three years as well.

Under the Recommendations page, you can find the analyst's recommendations for the company. From here, you can consider their suggestions when deciding on your trade.



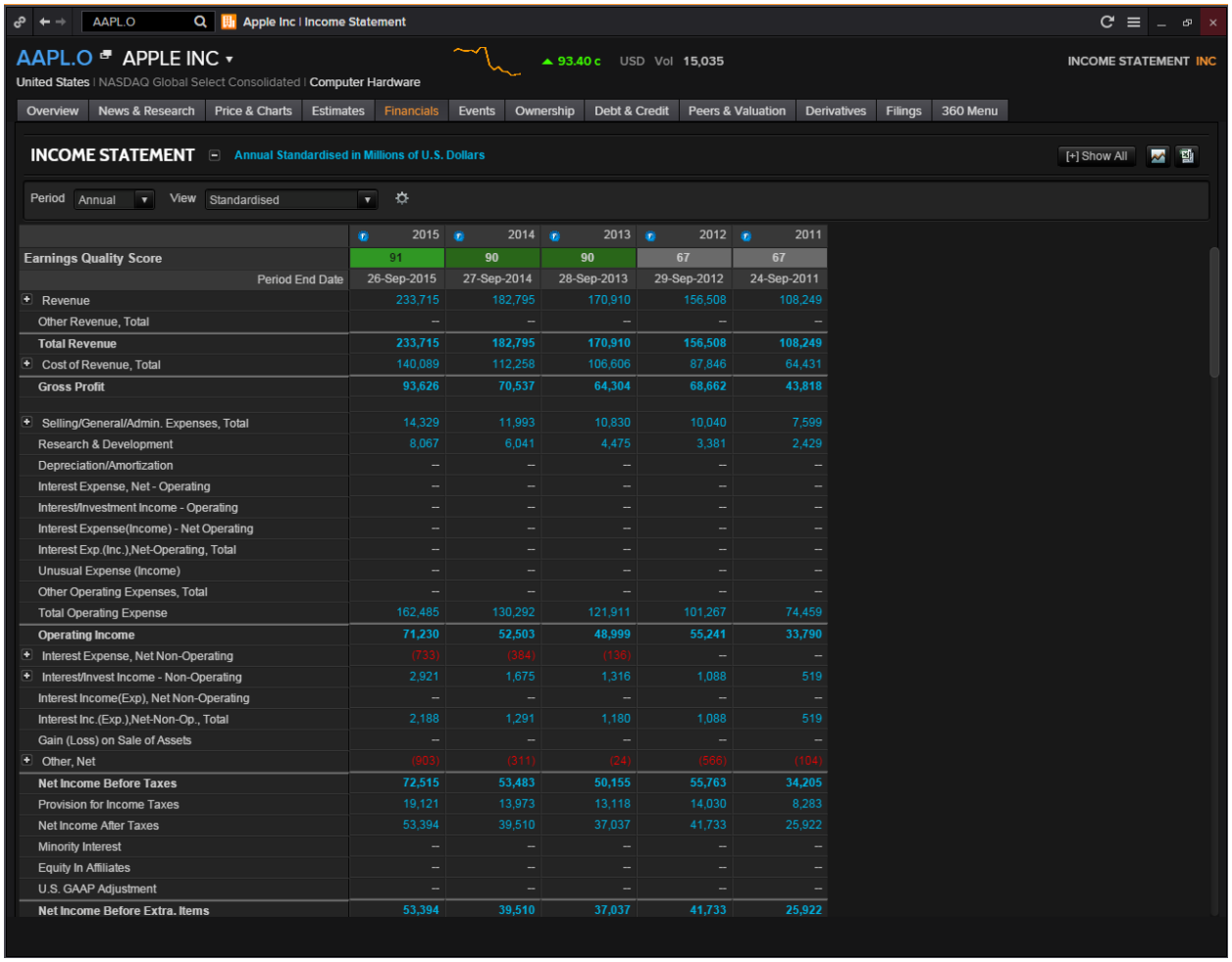
The research team in Eikon contacts analysts to ask them about their opinion about a stock, subsequently, they would assign a number (1: Strong buy to 5: Strong sell) to their recommendations, and subsequently find the average which would stand for their recommendation on whether to buy or sell the stock.

For example, here, analysts in general believe you should buy into Apple.

Financials

The “Financials” page is good for users who is interested about the Fundamentals of the company. From here, the following information is available.

1. Financial Statements (Income Statement, Balance Sheet and Cash Flow)
2. Operating Metrics
3. Segments
4. Major Customers
5. Ratios – Key Metrics
6. Ratios – Overview
7. Ratios – Profit/Value/Risk
8. Earnings Quality



	2015	2014	2013	2012	2011
Earnings Quality Score	91	90	90	67	67
Period End Date	26-Sep-2015	27-Sep-2014	28-Sep-2013	29-Sep-2012	24-Sep-2011
Revenue	233,715	182,795	170,910	156,508	108,249
Other Revenue, Total	–	–	–	–	–
Total Revenue	**233,715**	**182,795**	**170,910**	**156,508**	**108,249**
Cost of Revenue, Total	140,089	112,258	106,606	87,846	64,431
Gross Profit	**93,626**	**70,537**	**64,304**	**68,662**	**43,818**
Selling/General/Admin. Expenses, Total	14,329	11,993	10,830	10,040	7,599
Research & Development	8,067	6,041	4,475	3,381	2,429
Depreciation/Amortization	–	–	–	–	–
Interest Expense, Net - Operating	–	–	–	–	–
Interest/Investment Income - Operating	–	–	–	–	–
Interest Expense(Income) - Net Operating	–	–	–	–	–
Interest Exp.(Inc.),Net-Operating, Total	–	–	–	–	–
Unusual Expense (Income)	–	–	–	–	–
Other Operating Expenses, Total	–	–	–	–	–
Total Operating Expense	162,485	130,292	121,911	101,267	74,459
Operating Income	**71,230**	**52,503**	**48,999**	**55,241**	**33,790**
Interest Expense, Net Non-Operating	(733)	(384)	(136)	–	–
Interest/Invest Income - Non-Operating	2,921	1,675	1,316	1,088	519
Interest Income(Exp), Net Non-Operating	–	–	–	–	–
Interest Inc.(Exp.),Net-Non-Op., Total	2,188	1,291	1,180	1,088	519
Gain (Loss) on Sale of Assets	–	–	–	–	–
Other, Net	(903)	(311)	(24)	(566)	(104)
Net Income Before Taxes	**72,515**	**53,483**	**50,155**	**55,763**	**34,205**
Provision for Income Taxes	19,121	13,973	13,118	14,030	8,283
Net Income After Taxes	53,394	39,510	37,037	41,733	25,922
Minority Interest	–	–	–	–	–
Equity In Affiliates	–	–	–	–	–
U.S. GAAP Adjustment	–	–	–	–	–
Net Income Before Extra. Items	**53,394**	**39,510**	**37,037**	**41,733**	**25,922**

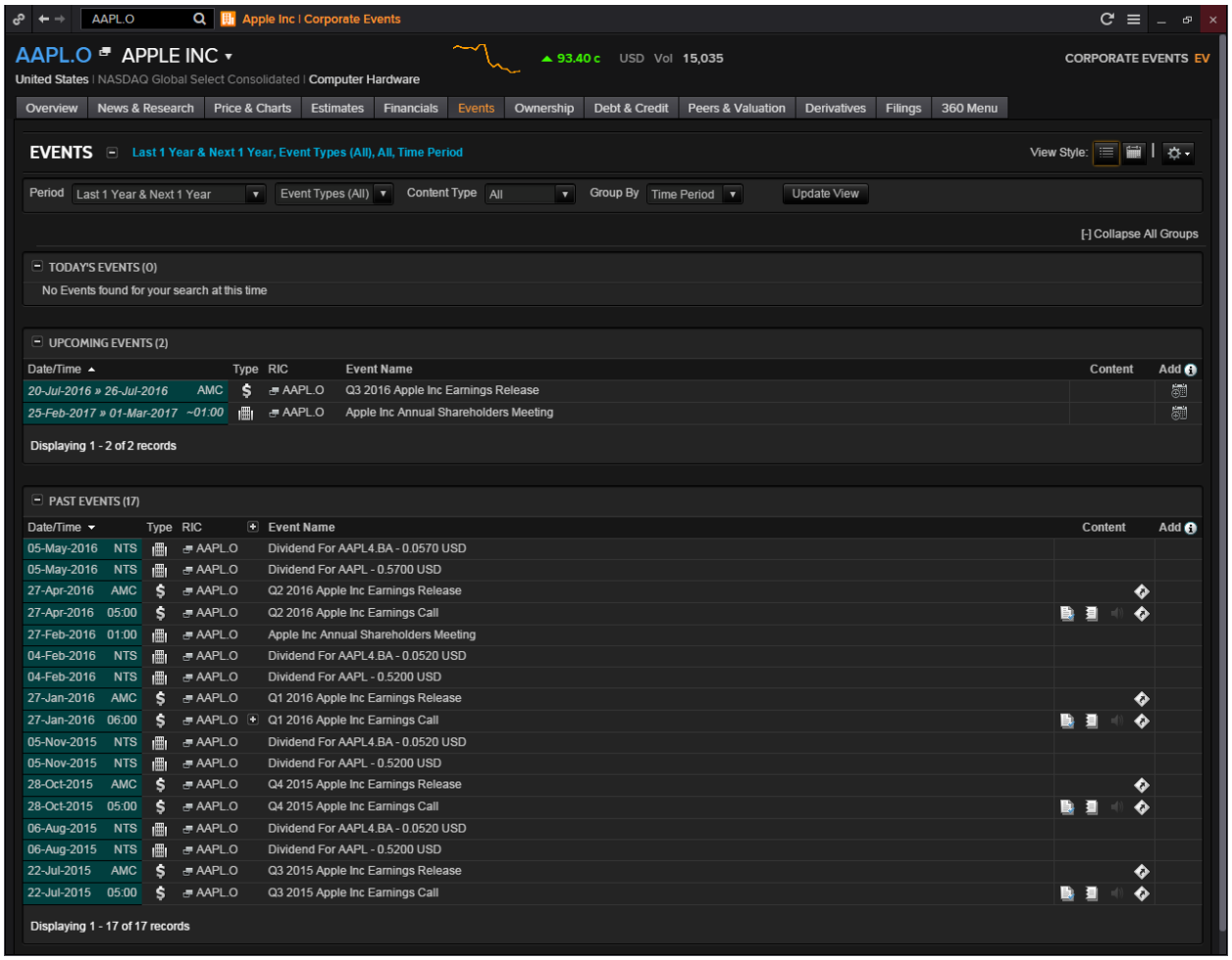
On the Ratios – Overview, you can find all kinds of ratios relating to information extracted from the accounting statements.

Segments would provide you the information about the different business segments of the company and the respective revenue for each segments. Note that different segments may belong to different industries.

Events

The “Events” page is useful for users to monitor the occurrence of certain events that may impact the price of the equity. These events include, corporate announcements, or dividend related dates. Information available include:

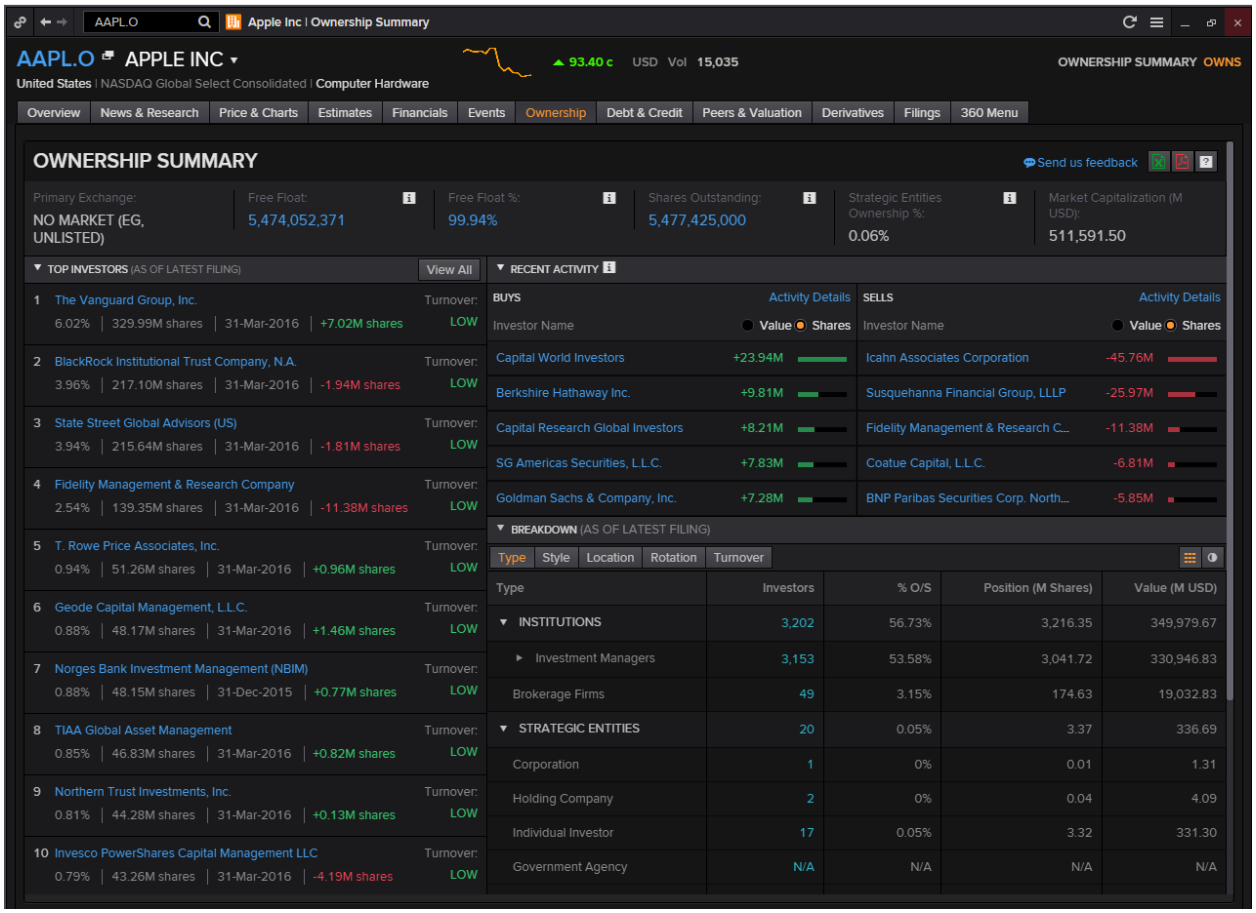
1. Corporate Events
2. Company Deals
3. Corporate Actions Calendar
4, Capital Change Overview
5. Capital Change Event Detail
6. Dividend Overview
7. Dividend Payment Detail



Ownership

Ownership data shows a company's shareholder list, sometimes it reflects the company's economy and governmental background.

1. Ownership Summary
2. Shareholders Report
3. Shareholders History Report
4. Fund Ownership Summary
5. Fund Shareholders Report and History Report
6. Insider/Stakeholder
7. Smart Holdings Model
8. Equity Holdings
9. Private Equity Holdings



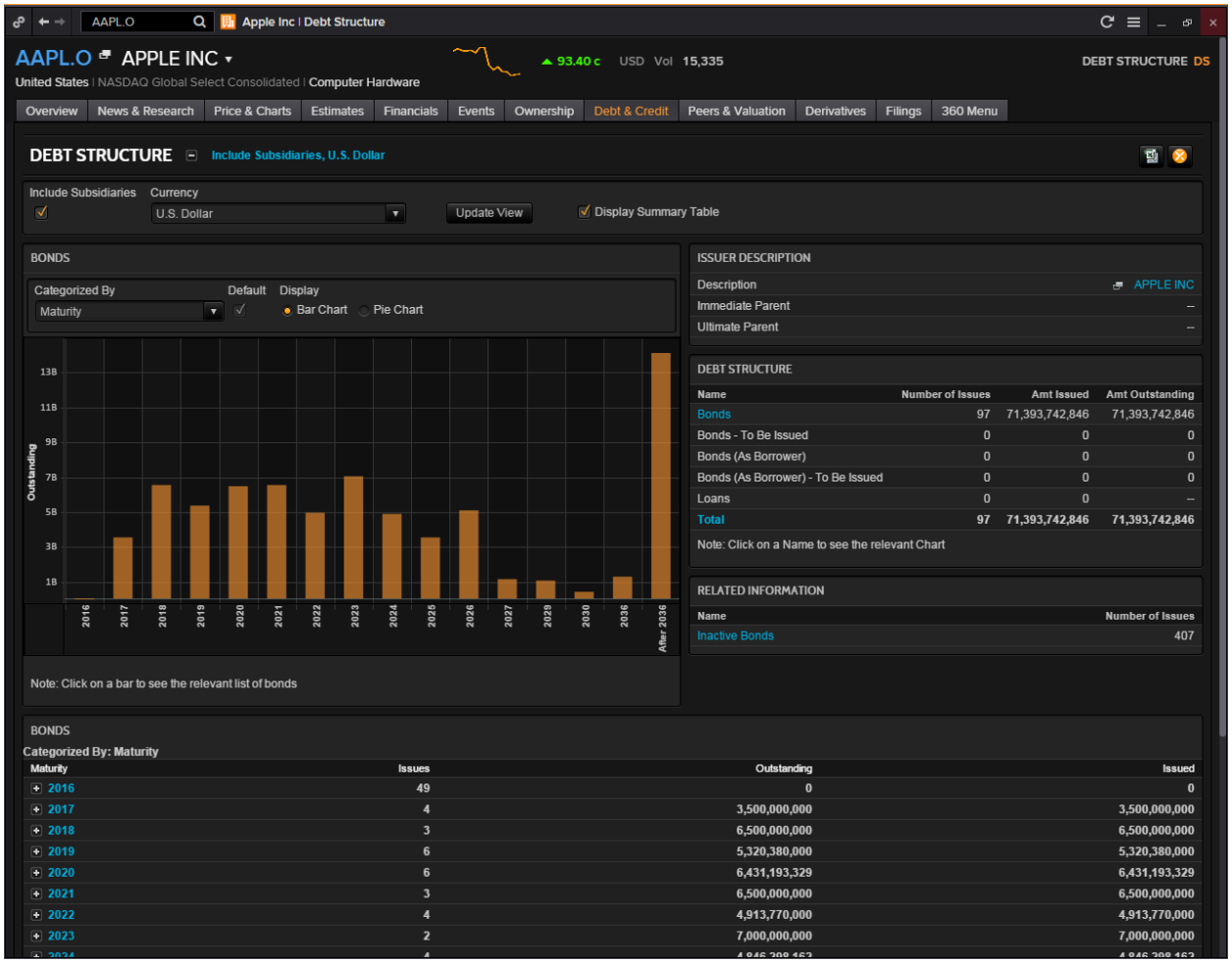
Hovering over any name in the list of investors would cause this icon  to pop up.

Pressing on this button would allow you to generate a visual overview of the historical holdings of this stock by this specific investor. Also, the top 10 Holdings of the company would be displayed in the form of a pie chart.

Debt and Credit

As the name suggests, this page allows users to have a more in-depth view on the debt structure of the company as well as its credit risk. The list of Credit Default swaps available for the company can also be found.

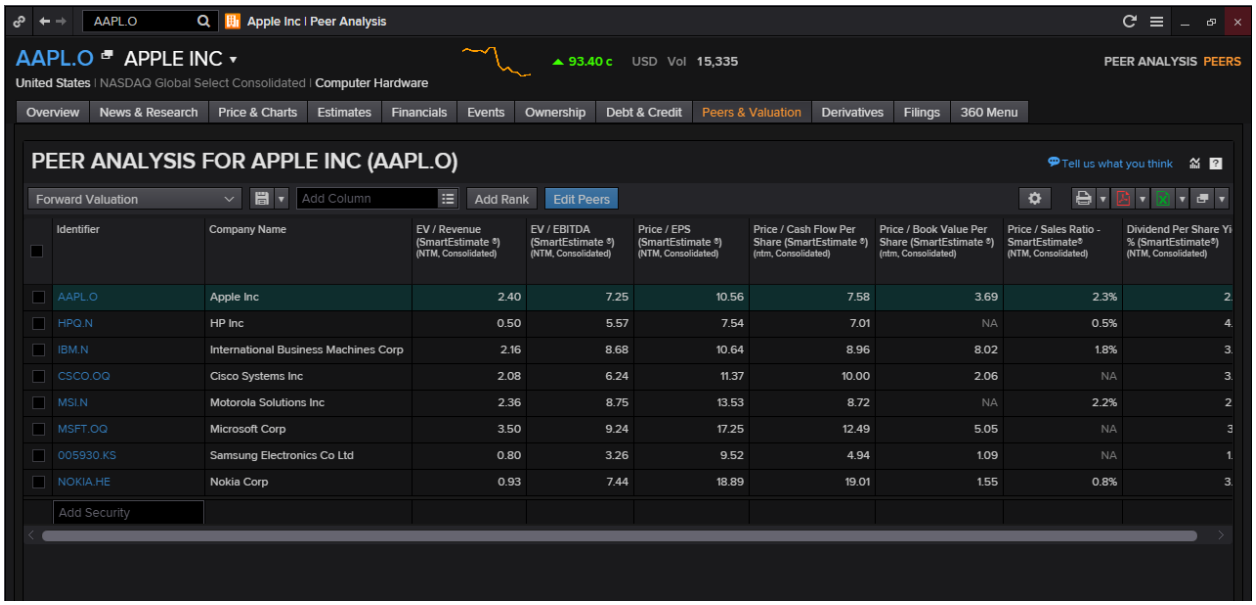
1. Debt Structure
2. Issuer Curve and Ratings
3. Exchangeables and CNVs
4. CDS Overview
5. CDS All Quotes
6. CDS Charts
7. CDS Calculator
8. Combined Credit Risk
9. Text Mining Credit Risk
10. Structural Credit Risk
11. Smart Ratios Credit Risk



Peer and Valuation

One good way to analyse a company other than through fundamental analysis is to do peer comparison with other similar stocks in the market.

1. Peer Analysis
2. Sector Competitors
3. Index Competitors
4. Stock Comparison
5. Value Chains
6. Relative Valuation Model
7. Relative Valuation
8. Intrinsic Valuation
9. Value momentum
10. Price Target Builder
11. Combined Alpha Model



As shown in the screenshot above of the peer analysis for Apple, a list of similar equity instruments and their respective data will be displayed in data form.

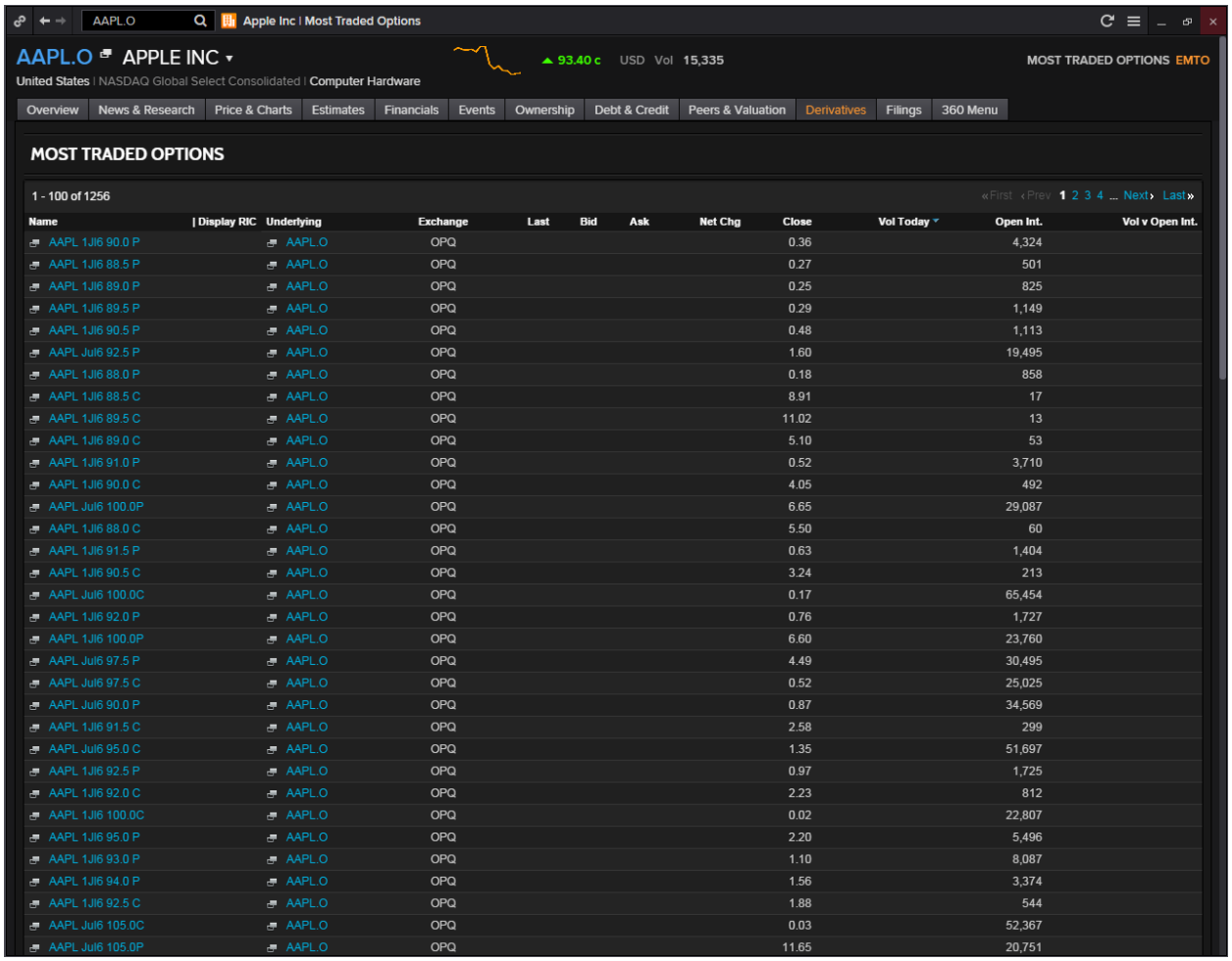
Should you have a preferred list of peers, you could always click the “Edit Peers” button in blue to choose your own comp set. Alternatively, you could type the name or RIC of the equity in the “Add Security option offered at the bottom of the page.

Derivatives

There are a few equity derivates that are tradable, but people generally purchase options and futures on equities.

Thus, in Eikon, we have provided a list of the most traded options for your perusal. Similarly, a more detailed list of futures and warrants available.

1. Most Traded Options
2. Options
3. All Futures
4. Warrant Overview



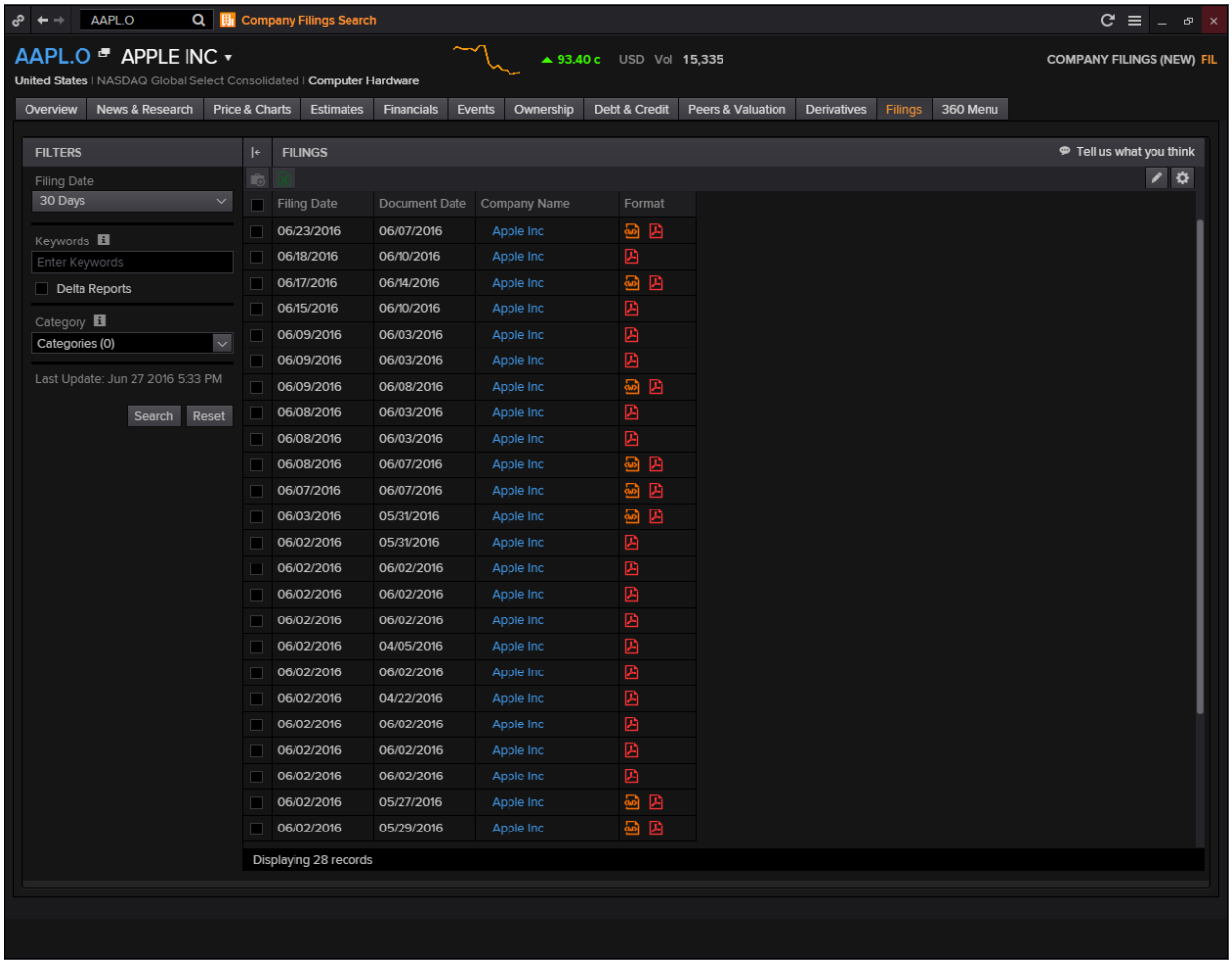
Name	Display RIC	Underlying	Exchange	Last	Bid	Ask	Net Chg	Close	Vol Today	Open Int.	Vol v Open Int.
AAPL 1Jl6 90.0 P		AAPL.O	OPQ					0.36		4,324	
AAPL 1Jl6 88.5 P		AAPL.O	OPQ					0.27		501	
AAPL 1Jl6 89.0 P		AAPL.O	OPQ					0.25		825	
AAPL 1Jl6 89.5 P		AAPL.O	OPQ					0.29		1,149	
AAPL 1Jl6 90.5 P		AAPL.O	OPQ					0.48		1,113	
AAPL Jul6 92.5 P		AAPL.O	OPQ					1.60		19,495	
AAPL 1Jl6 88.0 P		AAPL.O	OPQ					0.18		858	
AAPL 1Jl6 88.5 C		AAPL.O	OPQ					8.91		17	
AAPL 1Jl6 89.5 C		AAPL.O	OPQ					11.02		13	
AAPL 1Jl6 89.0 C		AAPL.O	OPQ					5.10		53	
AAPL 1Jl6 91.0 P		AAPL.O	OPQ					0.52		3,710	
AAPL 1Jl6 90.0 C		AAPL.O	OPQ					4.05		492	
AAPL Jul6 100.0P		AAPL.O	OPQ					6.65		29,087	
AAPL 1Jl6 88.0 C		AAPL.O	OPQ					5.50		60	
AAPL 1Jl6 91.5 P		AAPL.O	OPQ					0.63		1,404	
AAPL 1Jl6 90.5 C		AAPL.O	OPQ					3.24		213	
AAPL Jul6 100.0C		AAPL.O	OPQ					0.17		65,454	
AAPL 1Jl6 92.0 P		AAPL.O	OPQ					0.76		1,727	
AAPL 1Jl6 100.0P		AAPL.O	OPQ					6.60		23,760	
AAPL Jul6 97.5 P		AAPL.O	OPQ					4.49		30,495	
AAPL Jul6 97.5 C		AAPL.O	OPQ					0.52		25,025	
AAPL Jul6 90.0 P		AAPL.O	OPQ					0.87		34,569	
AAPL 1Jl6 91.5 C		AAPL.O	OPQ					2.58		299	
AAPL Jul6 95.0 C		AAPL.O	OPQ					1.35		51,697	
AAPL 1Jl6 92.5 P		AAPL.O	OPQ					0.97		1,725	
AAPL 1Jl6 92.0 C		AAPL.O	OPQ					2.23		812	
AAPL 1Jl6 100.0C		AAPL.O	OPQ					0.02		22,807	
AAPL 1Jl6 95.0 P		AAPL.O	OPQ					2.20		5,496	
AAPL 1Jl6 93.0 P		AAPL.O	OPQ					1.10		8,087	
AAPL 1Jl6 94.0 P		AAPL.O	OPQ					1.56		3,374	
AAPL 1Jl6 92.5 C		AAPL.O	OPQ					1.88		544	
AAPL Jul6 105.0C		AAPL.O	OPQ					0.03		52,367	
AAPL Jul6 105.0P		AAPL.O	OPQ					11.65		20,751	

While you may heard of options and futures, warrants is also a type of derivative available on the market.

Similar to options, a warrant confers a right for you to buy and sell an instrument. This may prompt you to categorise options and warrants as the same thing. However, there are a few key differences. Warrants are usually issued by the company and are traded OTC more than in an exchange. When an investor exercises their warrant, they are issued a newly issued stock instead of an outstanding one. Lastly, the expiry of a warrant is much longer than an option and often come in tenors lastly up to a few years rather than just a few months.

Filings

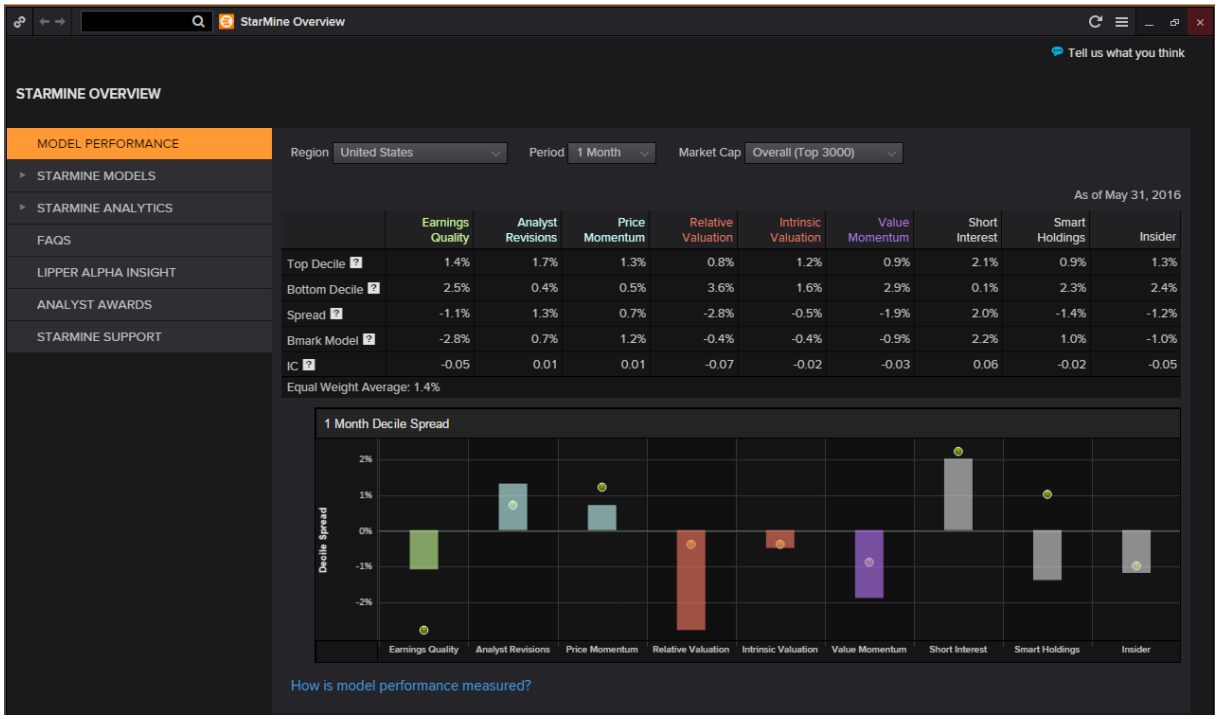
The “Filings” tab is just a one stop place for you to refer to recent company filings by the company such as their Form 8-K etc.



7. STARMINE Models

Overview

STARMINE models provide quantitative modelling and derived outputs, with unique value-add analytics and predictive financial modelling that help you make investment decisions.



In the Eikon Toolbar, enter **<STARMINE>** and hit enter in order to pull up the above page. From this page, you are able to view the overall model performance of STARMINE's predictions so far.

STARMINE uses two measures of stock selection. Firstly, a decile spread is used to analyse the model scores on the last trading day of the month and create two equally weighted portfolio based on these score. They then hold these stocks until the end of the holding period and they subsequently rebalance, ignoring transaction treads. They also utilise a global score in order to evaluate global performance, a region=relative score to examine performance in a region.

In this manual, we will briefly look at the following models.

1. Price Momentum Model
2. Analyst Revision Model
3. Earnings Quality
4. Relative Valuation
5. Intrinsic Valuation
6. Value Momentum
7. Credit Risk – Combined Model

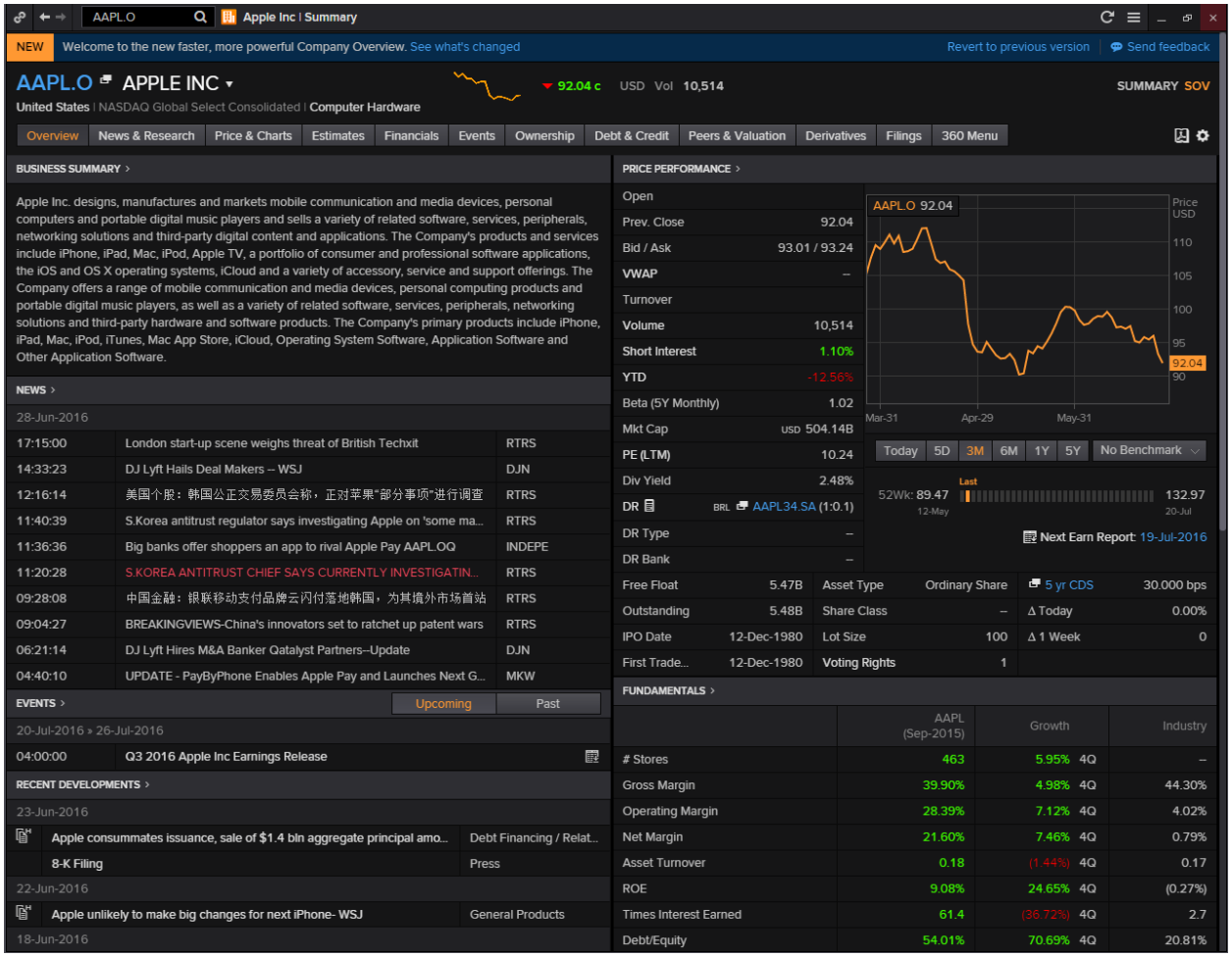
For every model covered, a detailed description would be provided, followed by an explanation and demonstration using Apple's equity.

How to Use StarMine Models?

In order to obtain results for any of the StarMine models, one should first navigate to the home page of the focus company (equity instrument first).

For example, we are searching for the StarMine models for the Apple Equity (AAPL.O).

1. In the Eikon Toolbar, search for the equity instrument you wish to view. (e.g. AAPL.O)



Here is where to find each model to be discussed:

1. Price Momentum Model – Prices and Charts
2. Analyst Revision Model - Estimates
3. Earnings Quality - Financials
4. Relative Valuation – Peers and Valuation
5. Intrinsic Valuation - Peers and Valuation
6. Value Momentum - Peers and Valuation
7. Credit Risk – Combined Model – Debt and Credit

Price Momentum Model

Overview

StarMine's Price Momentum Model is a percentile ranking of stocks based on recent historical price performance. The stock ranking scores are on a scale from one to a hundred (1-100). The model is highly predictive of relative price movement and is effective across stocks in each category, investment style, and market sector.

Long Term Component

The Long Term component exploits the tendency of stocks with strong performance over the past 6-12 months to continue to outperform going forward.

It compares the average daily closing price over the last six months to that over the last 12 months, rewarding stocks whose prices have increased over the last year.

This component is normalized by the trailing 12-month volatility, as measured by the standard deviation of the last 12 monthly price changes. This adjustment amplifies scores for stocks whose price changes were achieved in steady moves and moderates scores for those whose changes were inconsistent or the result of sharp jumps.

Mid Term Component

The Mid Term component compares the average daily closing price over the last ten trading days to that over the last three months, rewarding stocks whose 10-day average is greater than their 3-month average.

The Mid Term component is normalized by volatility, using an exponentially weighted moving average of daily returns over the last year.

Short Term Component

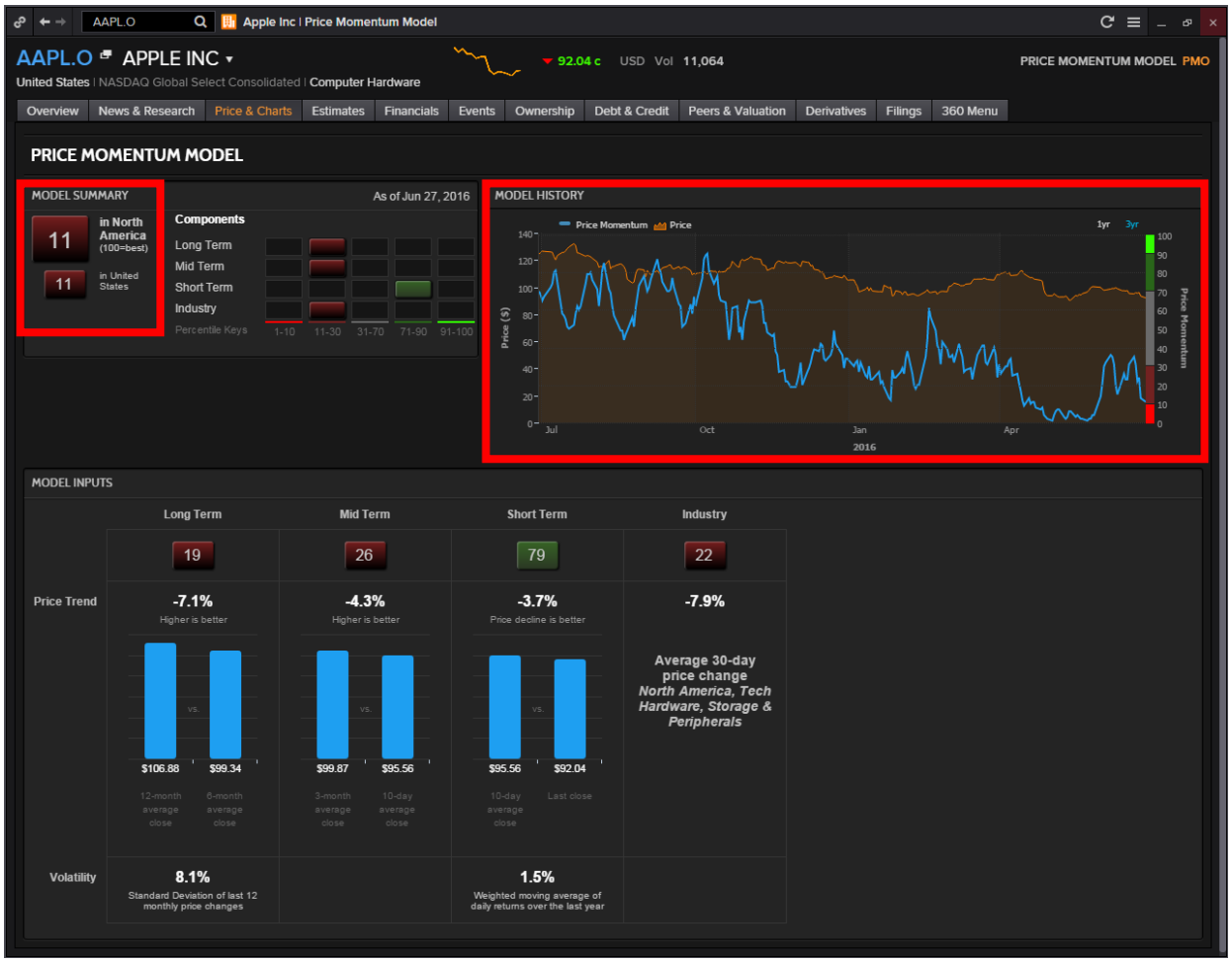
The Short Term component compares the most recent closing price to the average daily closing price over the last ten trading days. This component captures the phenomenon that, at short-term horizons, there is negative auto-correlation in returns - the biggest winners over the last week tend to be losers in the following week or so.

The Short Term component rewards stocks whose prices have decreased over the last ten days. It is normalized by volatility, using an exponentially weighted moving average of daily returns over the last year.

Industry Component

The Industry component captures the power of price momentum at the industry level. Namely, industries that have outperformed over the last 1-2 months tend to continue to outperform. The model ranks stocks on the basis of the average price change of its industry/region peers over the last month.

How to Use the Price Momentum Model?



When you click on the “Price Momentum Model” option under the “Prices and Charts” tab, the above page would load.

There are a few things to note from the above page.

Firstly, the **Model Summary.**

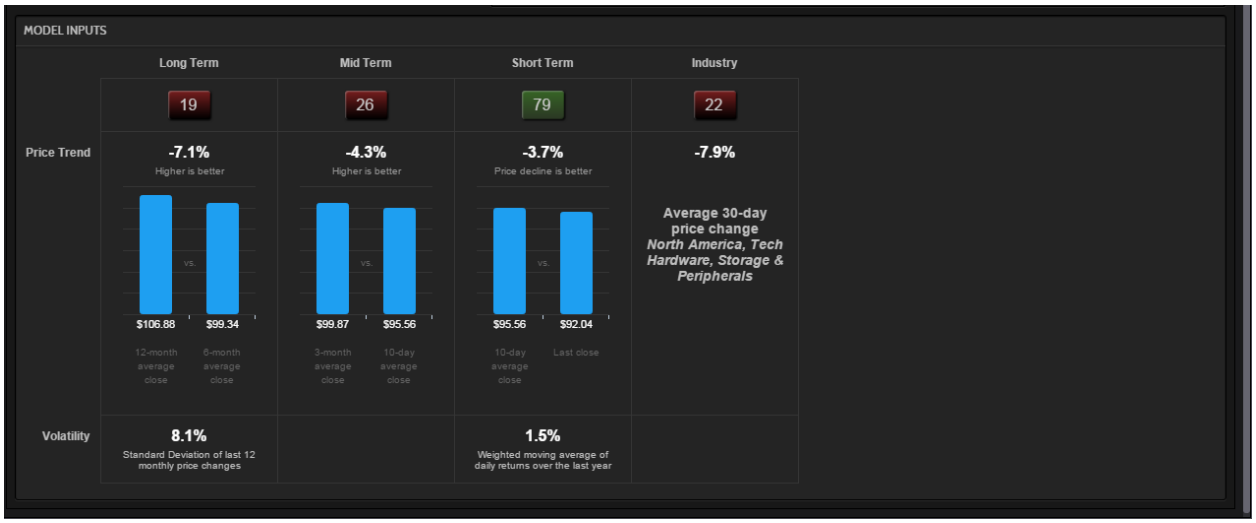
In the Model Summary, there is a “11” which is highlighted in red. What this figure means is that across all the components, the equity beat 11 percentile of its peers, here in comparison to “North America” and “United States”

Secondly, the **Model History.**

In the Model History, there is a chart providing the past performance of the price momentum model and the trading price of the equity instrument. The blue line on the chart represents the price momentum predicted by the model against the actual trading price, which is represented by the orange line.

An important thing to note is the colour bar located at the far right of the chart. The different colours of this bar which coincides with the figures in the Model Summary indicate whether the recommendation is Strong Sell, Strong Buy or anything in between.

Bright Red (0-10): Strong Sell
Dull Red (10-30): Sell
Grey (30-70): Hold
Dark Green (70-90): Buy
Bright Green (90-100): Strong Buy



Thirdly, at the bottom of the page, there is a section about **Model Input.**

Here, several charts which show the breakdown of the different components, the Long, Mid, Short Term and Industry allows users to have a better understanding about how the final figure “11” was derived.

One can view the criteria here, for the Long Term and Mid Term Component which states that “Higher is Better” for the Long and Mid Term periods is better. While this is easily understood – a higher price in the long run would signal an upward trend in price, the short term component may not be so easily understood at first glance.

While the LT and MT components try to explain the longer term price trend, the price should be declining in the short term in order to encourage a smooth entrance into the market. Hence “Price decline is better” would imply that the investor is able to buy into the market at a lower price.

The industry component would simply provide the investor an overview of how the specific equity is performing in comparison to other equity instruments in the same industry. Hence, even if its other components are performing badly but the equity is performing well compared to others in the same industry, it could imply that the industry on a whole is on a decline.

Analyst Revisions Model

Overview

StarMine's Analyst Revisions Model (ARM) is a percentile (1-100) ranking of stocks based on changes in analyst sentiment, with 100 representing the highest rank. The model is highly predictive of relative price movement and is effective across stocks in each capitalization category, investment style, and market sector.

StarMine's Analyst Revisions model (ARM) is a proprietary model that allows you to observe the key drivers for a stock by looking at individual revision components. For each stock, StarMine determines the most relevant estimate measures to include in ARM:

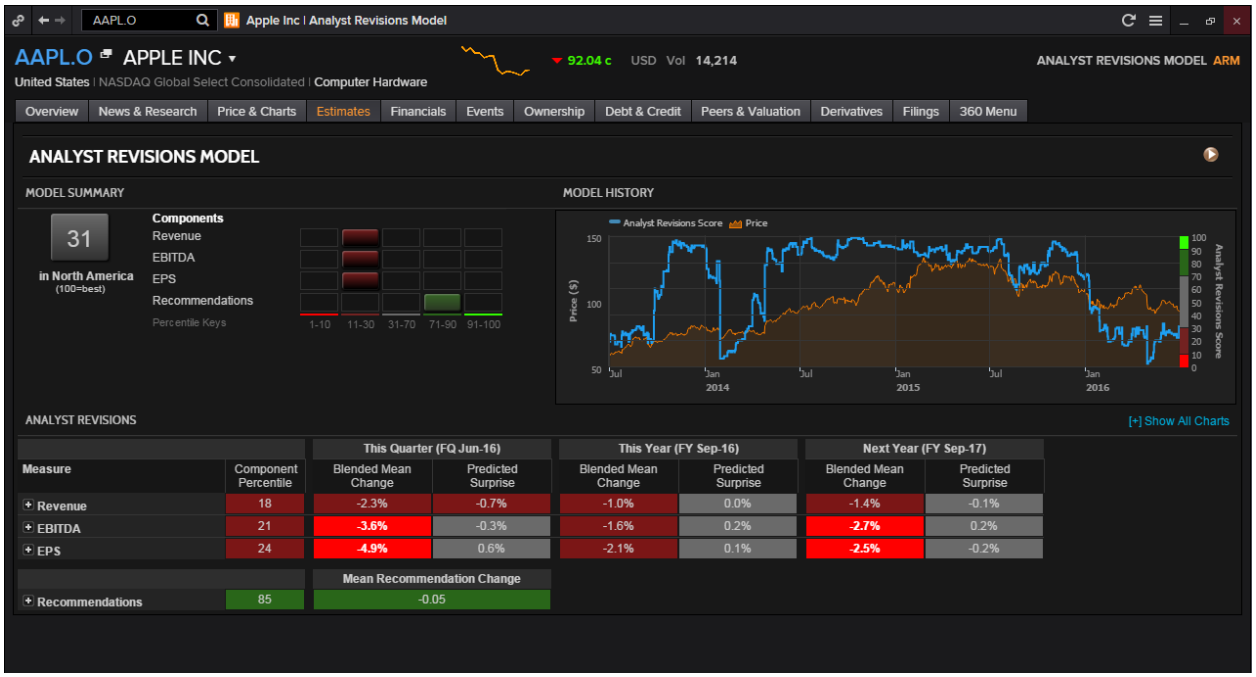
- StarMine's Preferred Earnings measure, which is EPS for most stocks

- EPS or EBITDA, depending on what was used as the Preferred Earnings measure

- Revenue, where available

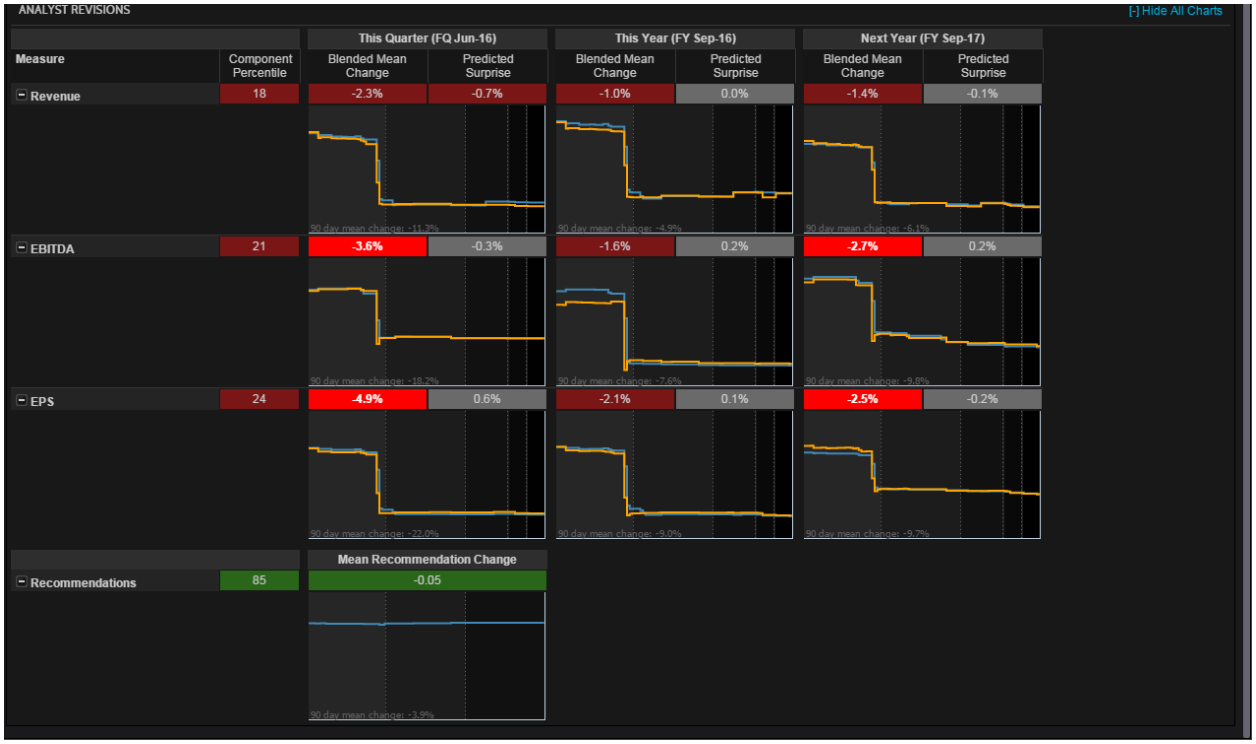
- Recommendations, for all securities for which recommendations data is available

How to Use the Analyst Revisions Model?



The model summary displays the overall percentile rank of the stocks in its region along with bar charts of how the individual components of the models have fared.

The model history would chart the stock price and the changes in the percentile score over time, showing how well analyst revisions have predicted the performance of the stock.



The **analyst revision** portion displays the percentile score for each of the components of the model. As shown in the above image, you are able to display charts for all the different factors.

For each estimate measure, the model is able to display changes over the past 90 days in the mean estimate and predicted surprise for

- the current quarter

- the current year

- the next year.

Predicted surprise displays the different between the current values for mean estimate and SmartEstimate. Charts here display the movement of mean estimate and SmartEstimate over time.

The numerical scores would incorporate the percentage change in each of the 7, 14, 30, 60 and 90 day change periods.

The **recommendations** are in dark green as shown above, indicating a buy recommendation. The mean change figure of '-0.05' incorporates the change in the consensus recommendation for each of the 30, 60, and 90-day change periods.

Earnings Quality

Overview

StarMine research findings have determined that the market is inefficient in differentiating between sustainable and unsustainable sources of earnings. In light of these findings, StarMine has developed its Earnings Quality (EQ) model – a percentile (1-100) ranking model developed using a systematic, quantitative methodology that evaluates earnings quality according to sustainability. The EQ model assigns higher rankings to companies that are more likely to sustain their earnings.

To generate its proprietary Earnings Quality (EQ) scores, StarMine uses computer-driven models to analyze financial statements and to calculate rankings for more than 35,000 companies worldwide. Data is updated daily. These scores have proven to be reliable predictors of a company's ability to sustain high earnings over the coming quarters.

With the StarMine EQ score, you can objectively compare a company's earnings quality to that of other companies:

- The model favours companies whose earnings are backed by cash flows and other sustainable sources.
- The model penalizes stocks driven by accruals and other less sustainable sources.
- Low scores should be considered more bearish, high scores more bullish.

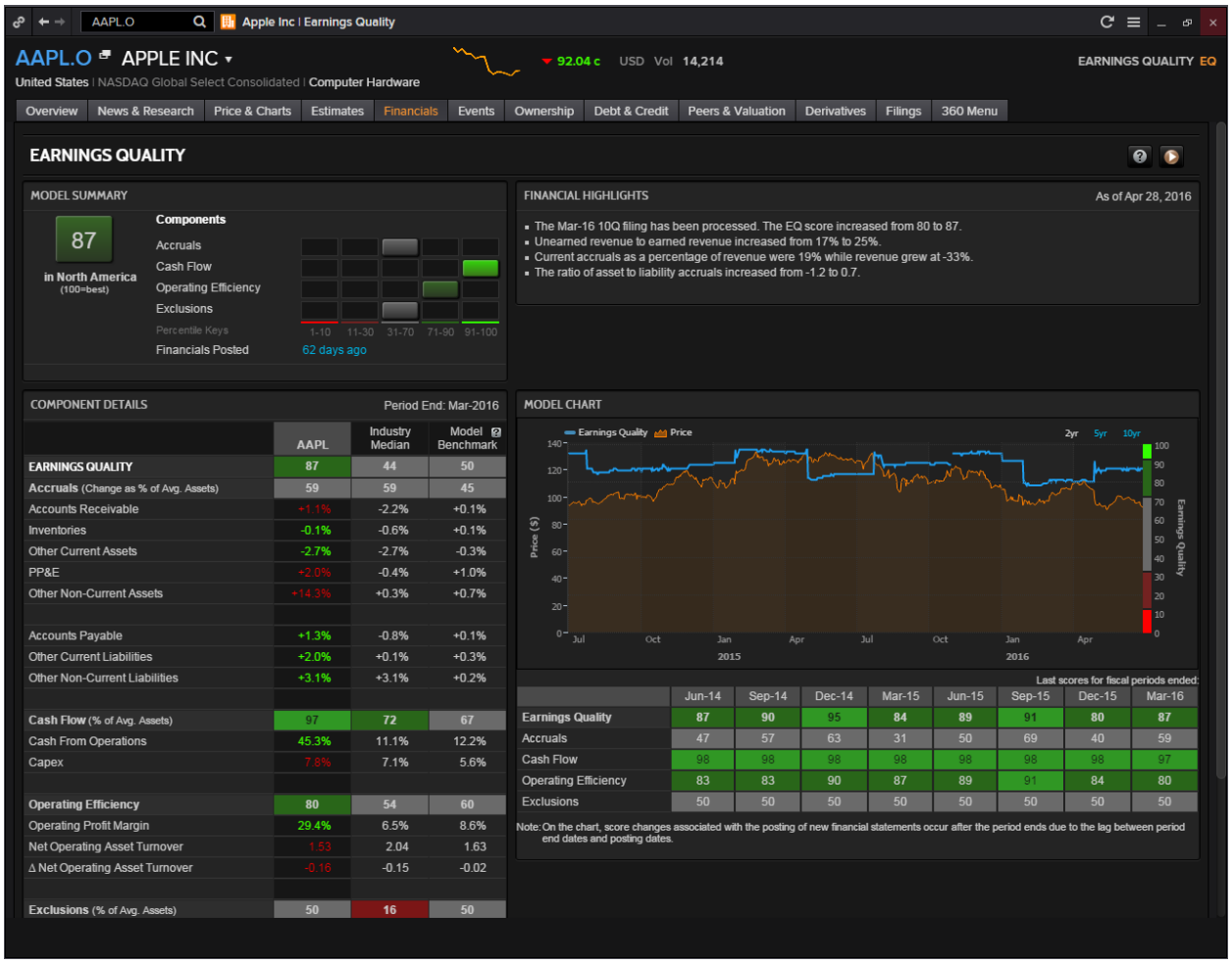
Model Components

The sources that StarMine's research has found to be most predictive of earnings sustainability are:

- Accruals
- Cash flow
- Operating efficiency
- Exclusions (North America only)

These sources are the components of the EQ model.

How to Use the Earnings Quality Model?



The **Model summary** displays the overall percentile score for the company relative to its region, and graphs the individual component scores that go into the overall score. Financials Posted indicates how recently the company filed its latest financial figures.

The **Financial Highlights** displays highlights from recent financial results, providing a quick summary of what is really going on in the fundamentals of the company.

Component Details displays a breakdown of each component. Values in green have a positive effect on the component score, while values in red have a negative effect.

Earnings Quality History has two different components. The chart in displays history for 2, 5, or 10 years (if available). It also shows stock price history. Roll over a point on the chart to see data for that date.

The table below the chart gives detailed scores for previous fiscal periods. These periods correspond to quarterly, semiannual or annual data, depending on the frequency of financial reporting by the company.

The table displays a maximum of eight columns of data, or up to five full years of history. For example, a company that reports financial results each quarter would have eight columns of quarterly data, while a company that reports only annual results would have five columns of annual data.

Relative Valuation

Overview

StarMine Relative Valuation is a percentile (1-100) ranking of stocks based on price and enterprise value multiples

There are a few benefits to using this model:

- Compare 12-month forward or 12-month trailing multiples for the focus company with average multiples for peers
- Customize the list of company peers
- Compare the focus company's current and historical multiples in table and chart form
- Quickly see which metrics show a significant premium or discount, thanks to colour-coding
- Select a metric to create a price target in Price Target Builder
- View the company's score in its region, country, and sector, using the StarMine Relative Valuation Model
- Analyze earnings per share (EPS) and revenue growth metrics for the company and its peer

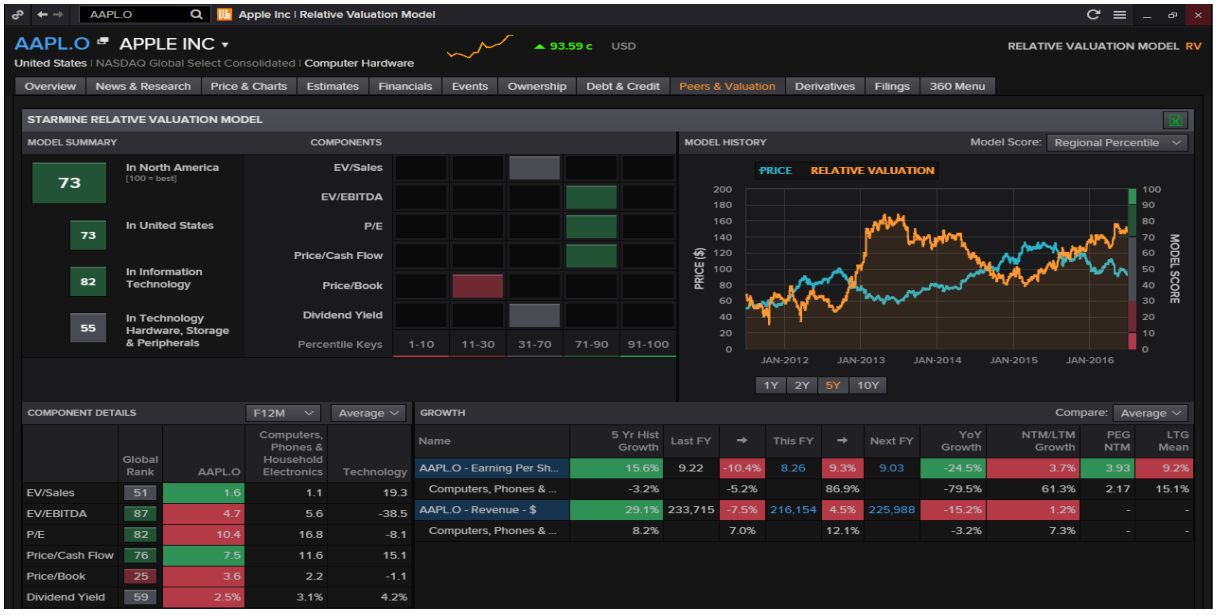
Valuation Metrics

Relative Valuation displays a wide range of valuation metrics for a focus company and its peers, including:

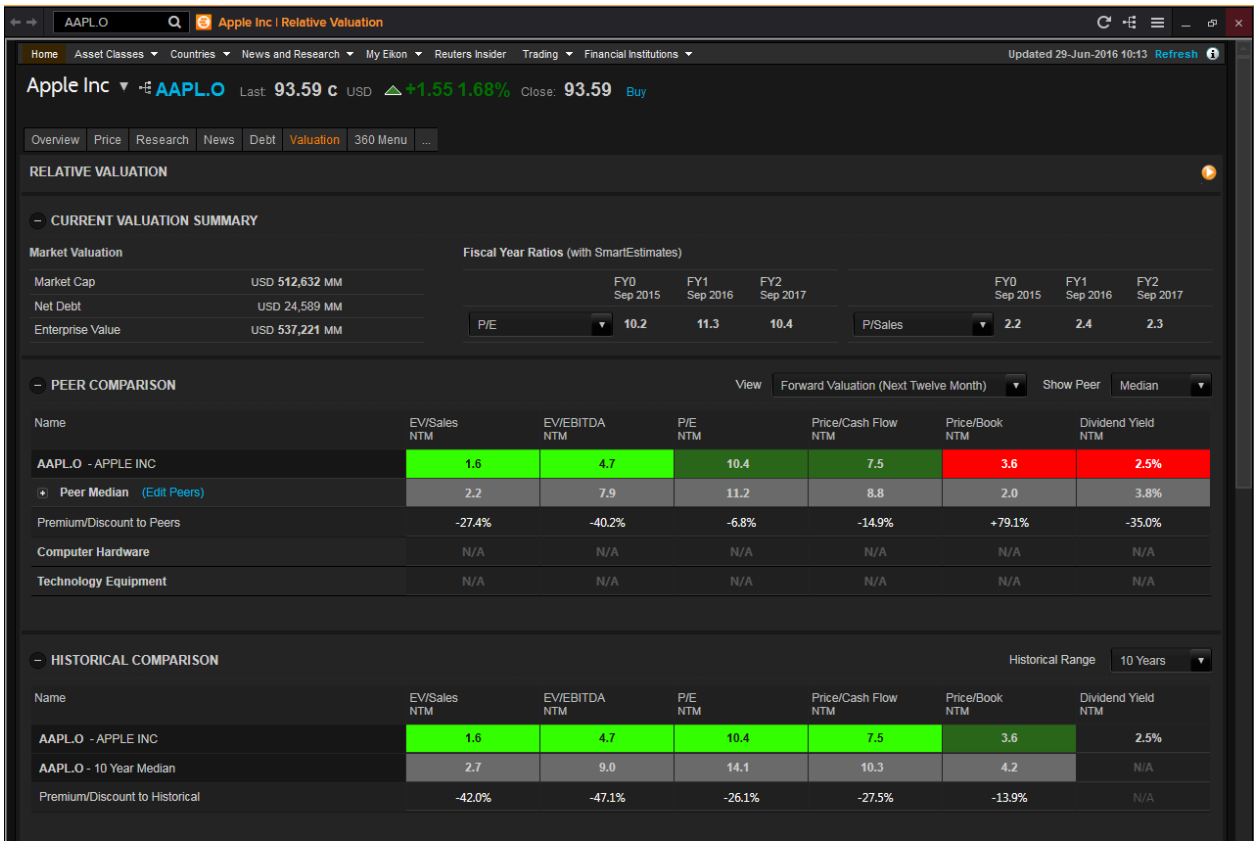
- Market capitalization
- Net debt (or cash)
- Enterprise value (EV)
- Price multiples (P/E, P/Cash Flow, P/Sales, P/Book, EV/EBITDA or EV/Sales)

One good thing to note is that there are two different Relative Valuation tools available on Eikon. While one provides a snapshot view of the relative valuation available (Relative Valuation Model), the other provides a more thorough explanation of relative valuation calculated for the particular company.

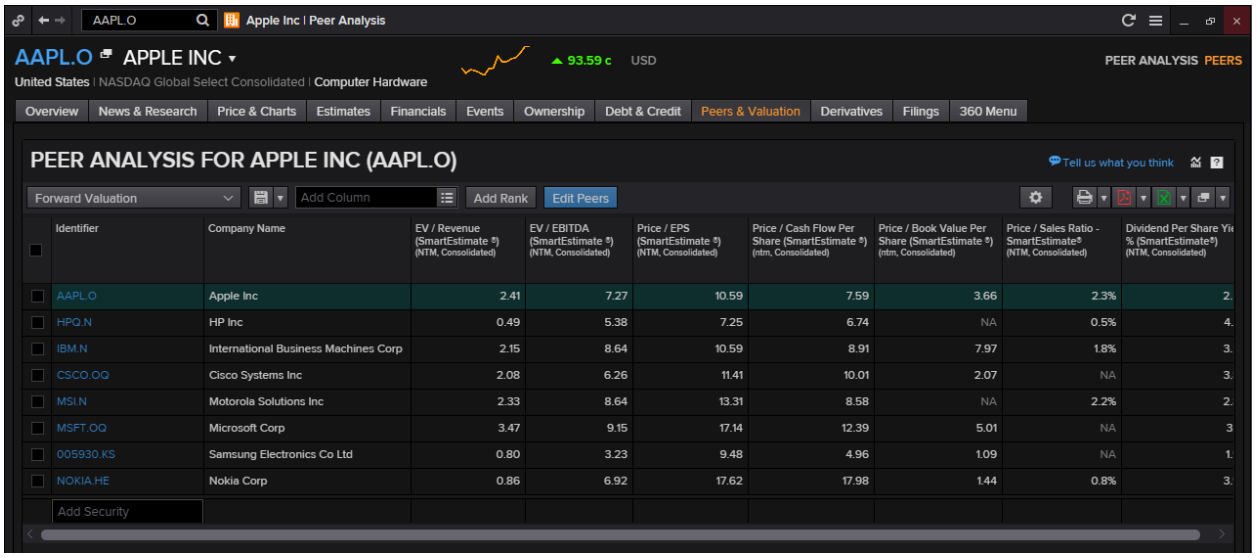
Below is the **Relative Valuation Model.**

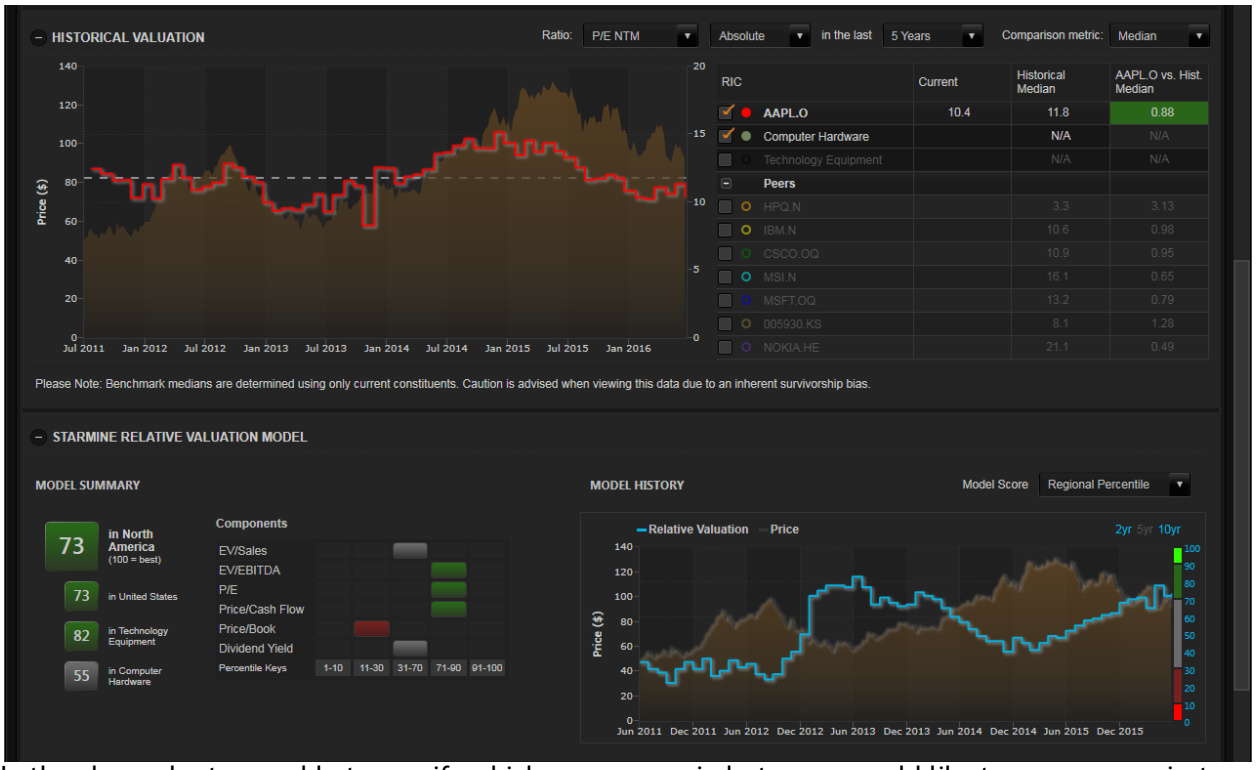


How to Use the Relative Valuation Tool?



One good thing to note is that when doing Peer Comparison, you are able to customise the peer group you are interested in. Clicking on the blue “Edit Peers” would redirect you to the following page for you to edit the list to your liking.





In the above chart, you able to specify which company or industry you would like to compare against, as well as the ratio preferred. Below the chart is the snapshot of the summary and history, a similar set up of all StarMine models

The growth portion provides you an overview of the different companies and their EPS/Revenue for this year, last year and the growth as well as an estimate for the next year and a 5 year historical growth figure.

Intrinsic Valuation Model

Overview

Intrinsic Valuation is based upon a dividend discount model that uses forecasts about the company's earnings, combined with proprietary adjustments to project future dividends. These dividend flows are then discounted back to the present time to arrive at an intrinsic value for the stock. The same model, when plugging in the current stock price, is also used to derive market-implied EPS growth rates.

Intrinsic Valuation uses StarMine SmartEstimates when available. SmartEstimates helps you better predict future earnings and analyst revisions. Compared to consensus estimates, SmartEstimates places more weight on recent forecasts by top-rated analysts. The model uses SmartEstimates and analyst long-term growth rates for earnings projections.

Projected DPS Calculation:

Type of Company	Calculation Method for Projected DPS
Companies that pay dividends currently	The payout ratio (DPS as a percentage of EPS) is determined in three key periods: Year 1 – In FY1, the model outputs a value of DPS and then calculates the implied payout ratio. This value uses DPS estimates when available. For North America, an estimate provided by analysts at Thomson Reuters called implied annual dividend (IAD) is used. This value is an annualized representation of the most recently-announced dividend policy, excluding special dividends. Outside North America, SmartEstimates for dividends are used. Year 5 – Starting with the DPS estimate used in FY1 and adjusting for past dividend momentum and estimates of long-term growth for EPS (LTG), the model provides an estimate for FY5 dividends. Steady State – The steady state payout rate reflects the average payout rate for mature companies.
Companies that do not currently pay dividends	An assumption is made that this policy will persist through FY5. A payout rate in FY10 is then forecast as a function of long-term growth (LTG), a relationship identified by StarMine Research in the empirical data.
Companies with the GICS industry assignment associated with REITs	The dividend payout ratio is set to reflect the legislated requirement (for example, 90% for REITs in the United States) for all periods after FY1. For FY1, the payout ratio is based on the implied dividend and earnings projections.

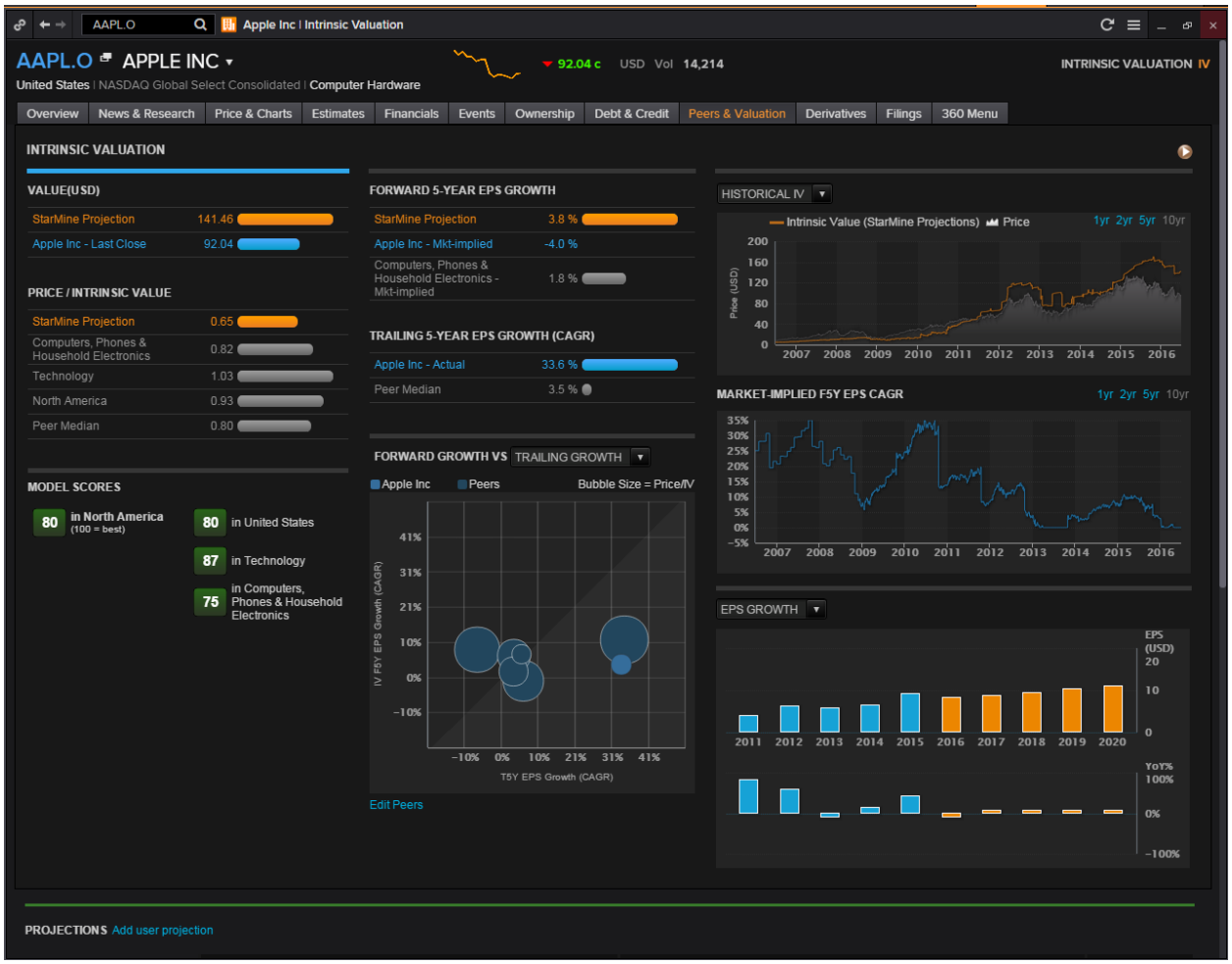
Calculation Formulae

EPS = Revenue x Net Margin / Shares Outstanding

When you enter custom projections, the following values are recalculated:

Custom Revenue	YoY Growth(x) changes to (Revenue(x) – Revenue(x-1))/Revenue(x-1) for current and next period EPS(x) changes to Revenue(x) * Net Margin(x) / Shares Outstanding(x) EPS YoY Growth changes to (EPS(x) – EPS(x-1))/EPS(x-1) using the new EPS(x) for current and next period
Custom Revenue YoY Growth	Revenue(x) changes to Revenue(x-1) * (1+ Revenue YoY Growth(x)) for current and all future periods EPS(x) changes to Revenue(x) * Net Margin(x) / Shares Outstanding(x) using the new Revenue(x) for current and all future periods EPS YoY Growth changes to (EPS(x) – EPS(x-1))/EPS(x-1) using the new EPS(x) for current and all future periods
Custom Net Margin	EPS(x) changes to Revenue(x) * Net Margin(x) / Shares Outstanding(x) EPS YoY Growth changes to (EPS(x) – EPS(x-1))/EPS(x-1) using the new EPS(x) for current and next period
Custom Shares Outstanding YoY Growth (FY1)	Shares Outstanding YoY Growth(x) = Shares Outstanding YoY Growth(FY1) – [Shares Outstanding YoY Growth(FY1) /(Years to Steady State-1)]*(x-1) for all future periods Shares Outstanding(FY1) = Shares Outstanding(FY0) * (1 + Shares Outstanding YoY Growth(FY1)) for current and all future periods EPS(x) changes to Revenue(x) * Net Margin(x) / Shares Outstanding(x), for current and all future periods EPS YoY Growth changes to (EPS(x) – EPS(x-1))/EPS(x-1) using the new EPS(x) for current and all future periods
Custom EPS	EPS YoY Growth changes to (EPS(x) – EPS(x-1))/EPS(x-1) using the new EPS(x) for current and next period Net Margin(x) changes to (Shares Outstanding(x) * EPS(x))/Revenue(x)
Custom EPS YoY Growth	EPS(x) changes to EPS YoY Growth(x) * EPS(x-1) for current and all future periods Net Margin(x) changes to (Shares Outstanding(x) * EPS(x))/Revenue(x) for all periods x and after

How to Use the Intrinsic Valuation Model?



The **value** portion displays the prior day's closing price of a stock and its projected value whiles the **price/intrinsic value** displays a stock comparison within its industry, sector, and region.

Forward 5-year EPS Growth compares the projected growth calculated by StarMine to the industry and to the market-implied growth.

Forward Growth VS displays a diagram of the forward growth compared to the trailing growth or forward P/E for the company and its peers. Bubbles in the chart area in white indicate that, for the companies in question:

- Forward growth is greater than trailing growth, which signals a company with accelerating growth, for a trailing growth chart
- The PEG ratio is less than 1

Market Implied F5Y EPS CAGR plots the historical value of market expectations for the EPS growth for the company over the chosen period.

EPS Growth plots historical and projected EPS and YOY growth rates.

Historical and Implied Future ROE plots five years of historical ROE and ROA (when available), and annual figures for future implied ROE for ten years followed by five-year increments out to FY15.

The **Trailing 5-year EPS Growth** compares company trailing growth to that of its peers.

Value Momentum

Overview

StarMine's Value-Momentum (Val-Mo) model can be used in a stock ranking or screening system, as an input into a quantitative multi-factor investment model, or for reference in a non-quantitative strategy.

The Value-Momentum model is a percentile (1-100) ranking of stocks based on recent valuation and momentum characteristics. These characteristics are described in combining value and momentum signals.

The model uniquely captures the signals given by valuation and momentum characteristics by combining four of StarMine's stock selection models:

- Intrinsic Valuation Model and Relative Valuation Model for value characteristics

- Analyst Revisions Model and Price Momentum Model for momentum characteristics

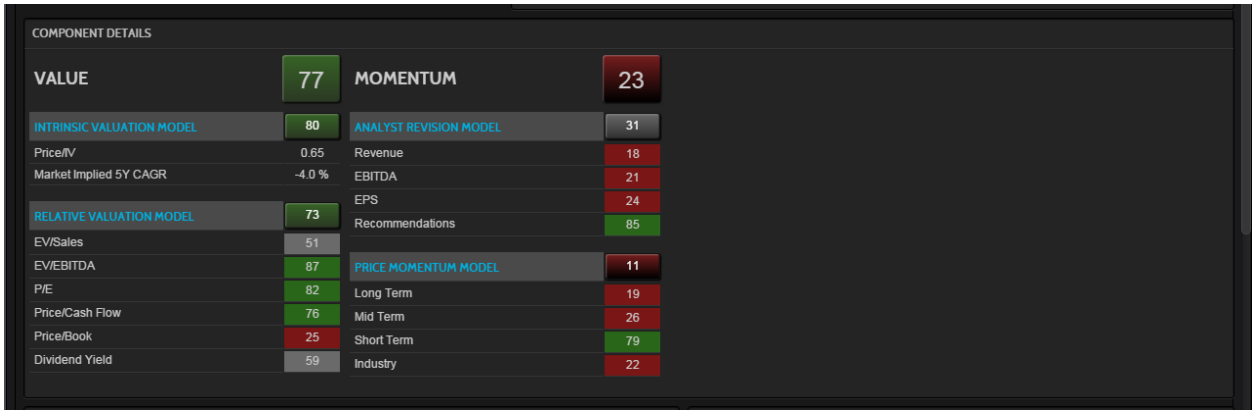
The combination of global ranks on each of these four input models results in the overall model scores for a security. The overall score is generated in two steps:

1	StarMine includes only non-micro-cap stocks (as defined by the top 98.5% of market cap in each region) in the "first-pass" ranking to ensure that illiquid micro-cap stocks do not influence the score of any securities. This roughly corresponds to the top 3,000 in North America, top 1,500 in Developed Europe, top 600 in Developed Asia ex-Japan, top 1,500 in Japan, and top 2,500 in Emerging Markets.
2	Micro-cap stocks are then positioned in the "second-pass" such that the original ordering of securities is preserved. Thus, the score is uniformly distributed over the set of all non-micro-cap securities. However, the distribution is allowed to be non-uniform when micro-caps are included.

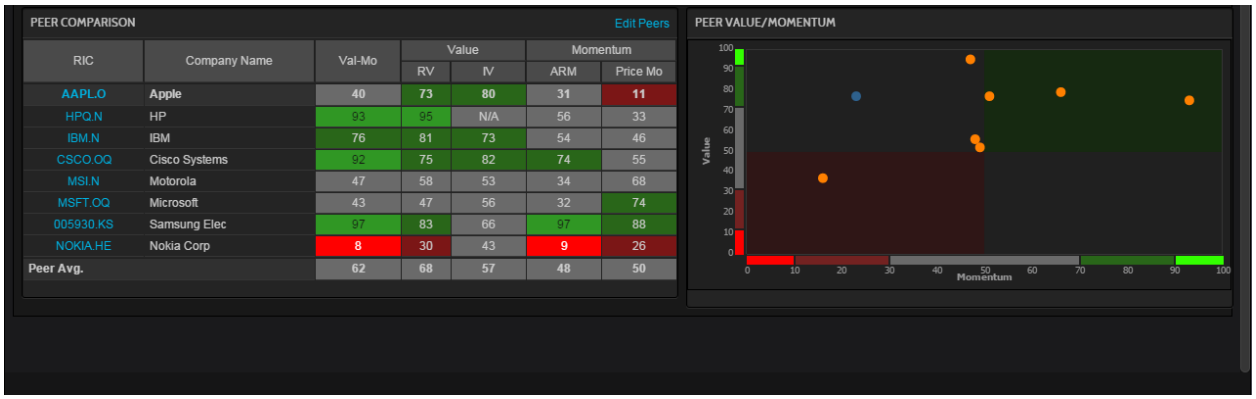
How to Use the Value Momentum Model?

The **model summary** displays the component scores display the rankings of the company derived from the Relative Valuation (StarMine RV), Intrinsic Valuation (StarMine IV), Analyst Revisions (StarMine ARM), and Price Momentum (StarMine Price Mo) component models. Component scores are then aggregated to form the overall company score, indicative of the company's ranking compared to other companies in the same region and country.

The **model history** charts the stock price and changes in the stock's percentile score over time.



The **component details** display a breakdown of the component models that drive the ranking results.



The **peer comparison** displays model scores and component rankings for peer companies. The default list of peers is based on competitor lists provided in filings, analyst cross coverage, business classification, and revenue proximity. This hierarchical approach produces very reasonable sets of peer companies for most securities.

Peer Value/Momentum plots the average ranking of the focus stock and its peers. It provides a visual cue indicating if stocks have a bullish or bearish outlook:

- Green area - bullish outlook
- Grey area - lack of advantage
- Red area - bearish outlook

Credit Risk – Combined Model

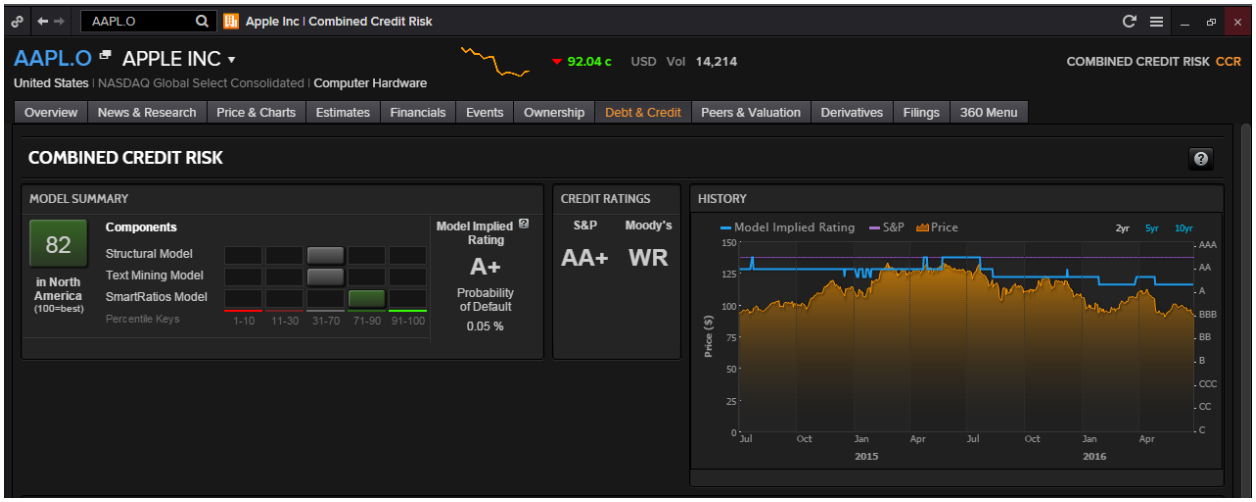
Overview

The Credit Risk Combined Model is a proprietary corporate credit risk model suite that includes models assessing a company's default risk through both the accounting ratio analysis and the contingent claims analysis. In addition, StarMine's credit risk model suite includes a novel third approach that applies cutting-edge machine learning algorithms to mining textual data for information regarding a company's financial health.

Structural Model	The StarMine Structural Credit Risk Model (StarMine SCR) evaluates credit risk from the equity market's view via StarMine's proprietary extension of the Merton structural default prediction framework that models a company's equity as a call option on its assets.
SmartRatios Model	The StarMine SmartRatios Credit Risk Model (StarMine SRCR) utilizes financial ratio analysis for credit risk assessment and incorporates both reported information and forward-looking estimates via the StarMine SmartEstimate.
Text Mining Model	The StarMine Text Mining Credit Risk Model (StarMine TMCR) mines the language in textual data from multiple sources (Reuters News, StreetEvents conference call transcripts, corporate filings, and select broker research reports) to evaluate companies' potential financial distress.

The combination of these three models generates a single, final estimate of public company credit risk that is more accurate than using any one data source alone.

How to Use the Combined Credit Risk Model?



The **Model Summary** provides component scores that display the credit quality rankings of the company derived from the Structural, Text Mining, and SmartRatios models respectively. Component scores are then aggregated to form the total company score, indicative of:

- The company's ranking compared to other companies in the same region
- The relative probability of the company to default on its credit obligations.

A high score indicates a lower credit risk. The Implied rating is based on the default probability derived from the component models.

The **credit ratings** portion displays Standard & Poor's and Moody's Foreign Issuer Long Term Rating. The above illustration shows a stock rated: A+ by the model AA+ by S&P no rating available from Moody's.

The **Component Details** displays a breakdown of the component models that drive the ranking and rating results. The weight given to each component model is based on the volume of text on a given company. Hence, the weight of the Credit Risk - Text Mining Model increases with increasing text volume.

The **Peer Comparison** displays credit quality ratings for the top peer companies. The default list of peers is based on competitor lists provided in filings, analyst cross coverage, business classification, and revenue proximity. This hierarchical approach produces very reasonable sets of peer companies for most securities.

The **Peer Credit Ratings** plots the average rating of the focus stock and its peers. The unit line joining the same rating pairs on both axes provides a visual cue indicating if stocks have a bullish or bearish outlook:

- Stocks above the line, in the green area, have a bullish outlook
- Stocks on the line indicate that the model and agency ratings are identical, signalling a lack of advantage
- Stocks below the line, in the pink area, indicate a lower model rating compared to the agency rating, signalling a bearish outlook

8. Equity Derivatives

There are four main equity derivatives which are mainly traded

1. Equity Options
2. Equity Warrants
3. Index Options
4. Index Futures

Equity Index Futures

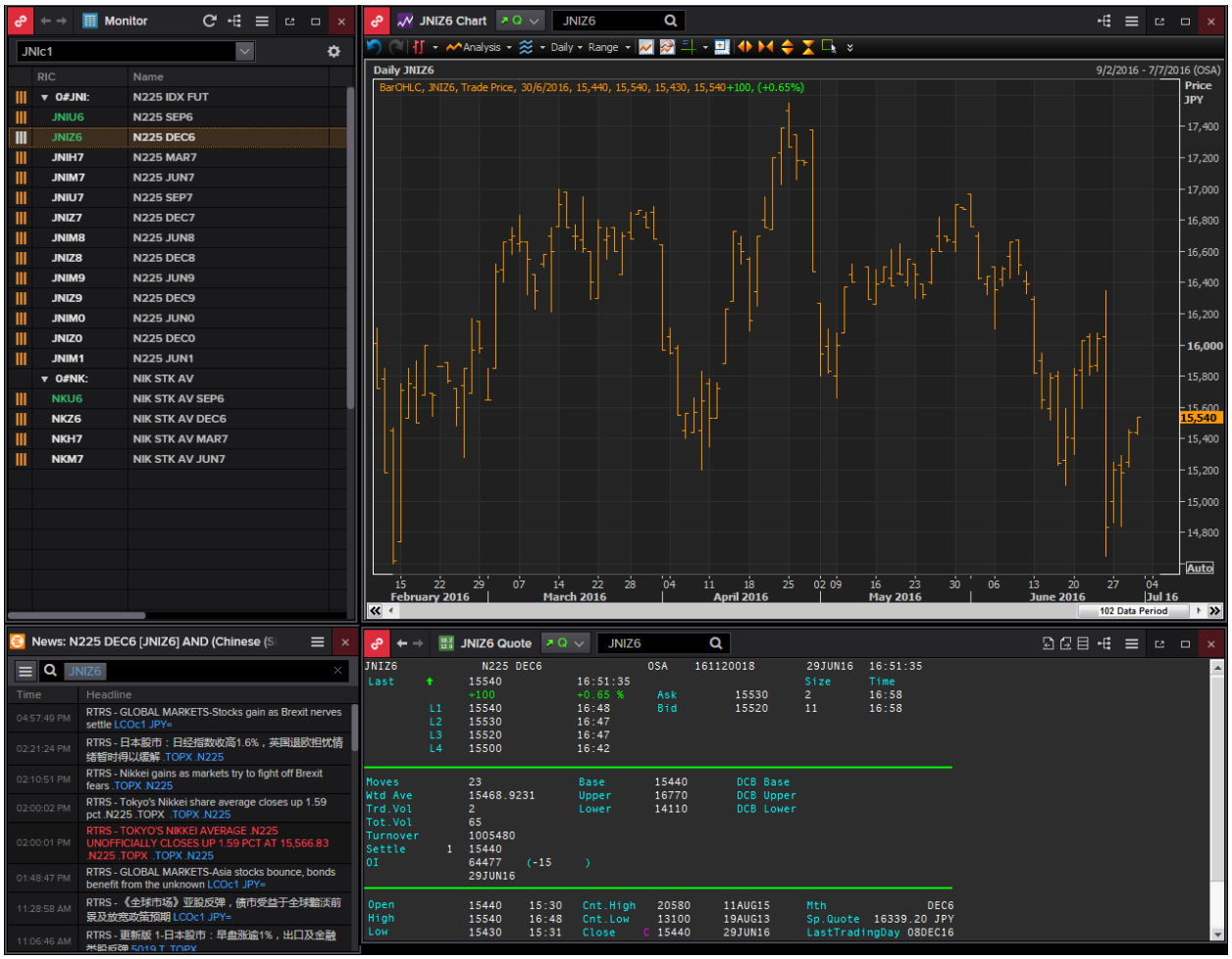
Equity Index Futures are futures contracts whose value is dependent on the level of na underlying stock index, such as the FTSE 100 or the S&P500.

Similar to commodity futures, the different futures contracts each have a continuation RIC.

Continuation RICs are constructed by using a lower case “c” and a number which denotes whether it is the first month or second or third in the series.

e.g. FFI (FTSE100 Future root) c (continuation) 1 (first month) = FFIc1

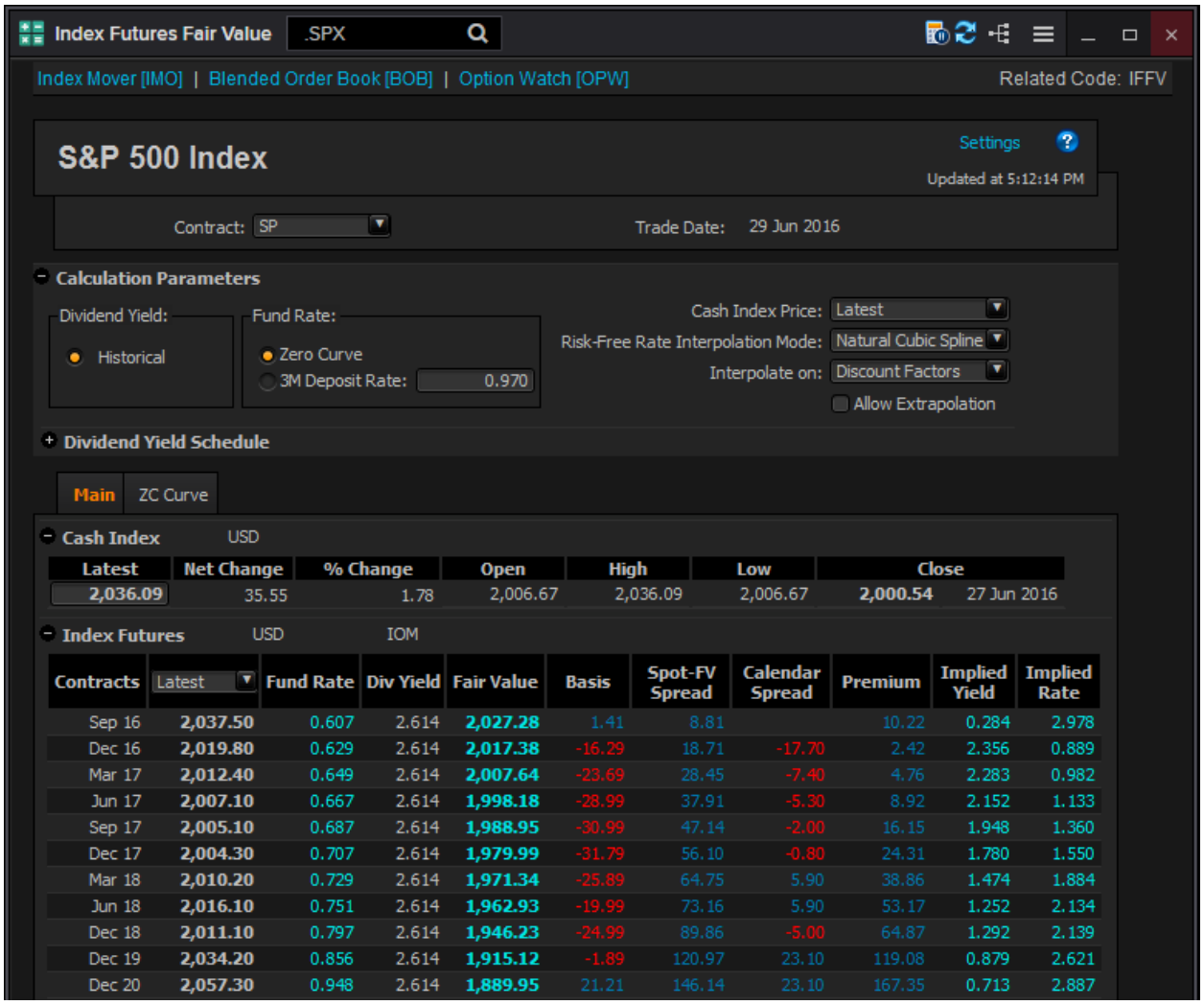
In order to monitor different equity index price movements, a page could be set up as shown below, with a monitor, news, quotes and charts. By linking the pages together, you are able to quickly monitor different chain contracts as per your need.



Index Futures Fair Value Calculator <IFFV>

An application that may come in useful is the Index Futures Fair Value Calculator **<IFFV>**. The FV calculator adopts the FV assumption where it is believed that futures contracts should be priced given such things as current index level, index dividends, and days to expiration and interest rate. This excludes short term supply and demand fluctuations.

Here, Fair Value = Cash Price x (1 + DaystoDelivery x (Fund Rate – Div Yield) x 100)/CcyYearBasis



1. In the Eikon Toolbar, search **<IFFV>**

2. Enter/Search the Cash Index Code (e.g. <.STI>)

3. Choose a Contract Root

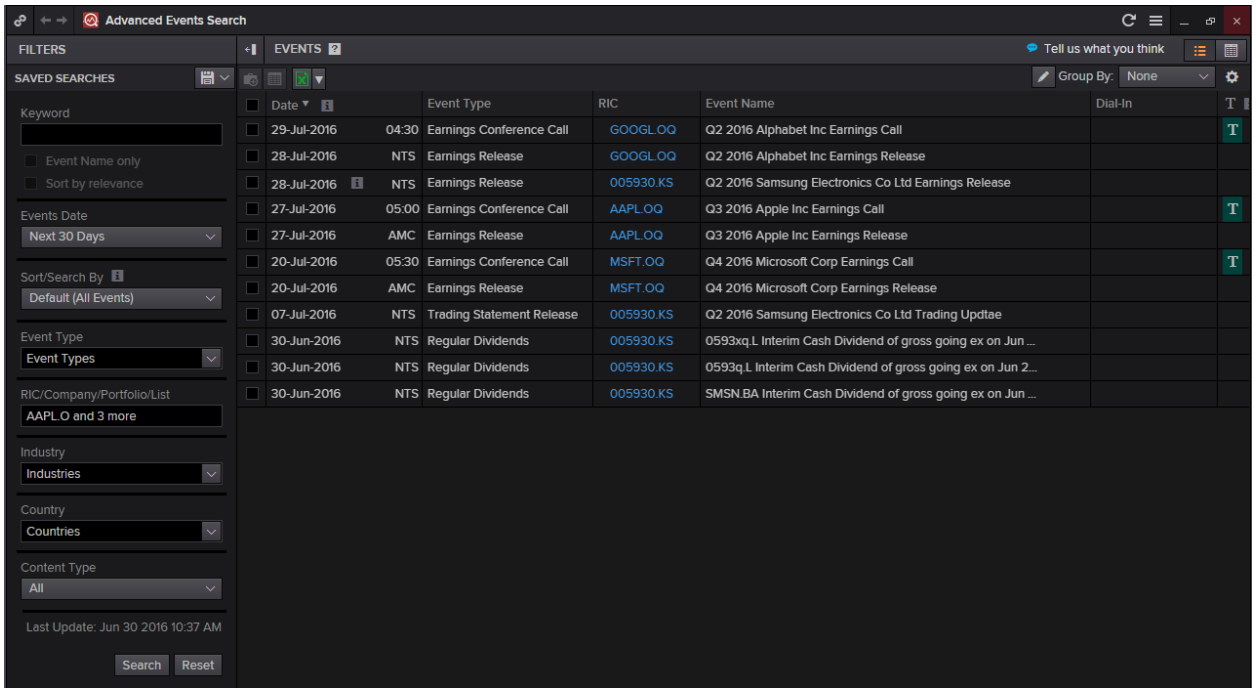
Column Description
- Dividend Yields: widely used to measure the income return of a share
- Calendar Spread: different between current price of a future and price of its nearest term contract
- Basis: Futures contract price – index price
- Premium: futures price – fair value
- Implied Rate: difference between spot rate and the futures rate (+ve: higher future borrowing rate)
- Implied yield: anticipated yield from a futures contract based on the current spot rate.

9. Equity Applications

Advanced Events Search <ADVEV>

One page which would be useful for investors to look at is the Advanced Events Search <ADVEV> application. Using this application, users can view future events, such as

1. Earnings and Corporate
2. Dividends
3. Institutional
4. Conference
5. General
6. Transactions
7. Corporate Actions (CorAx)
8. Economic



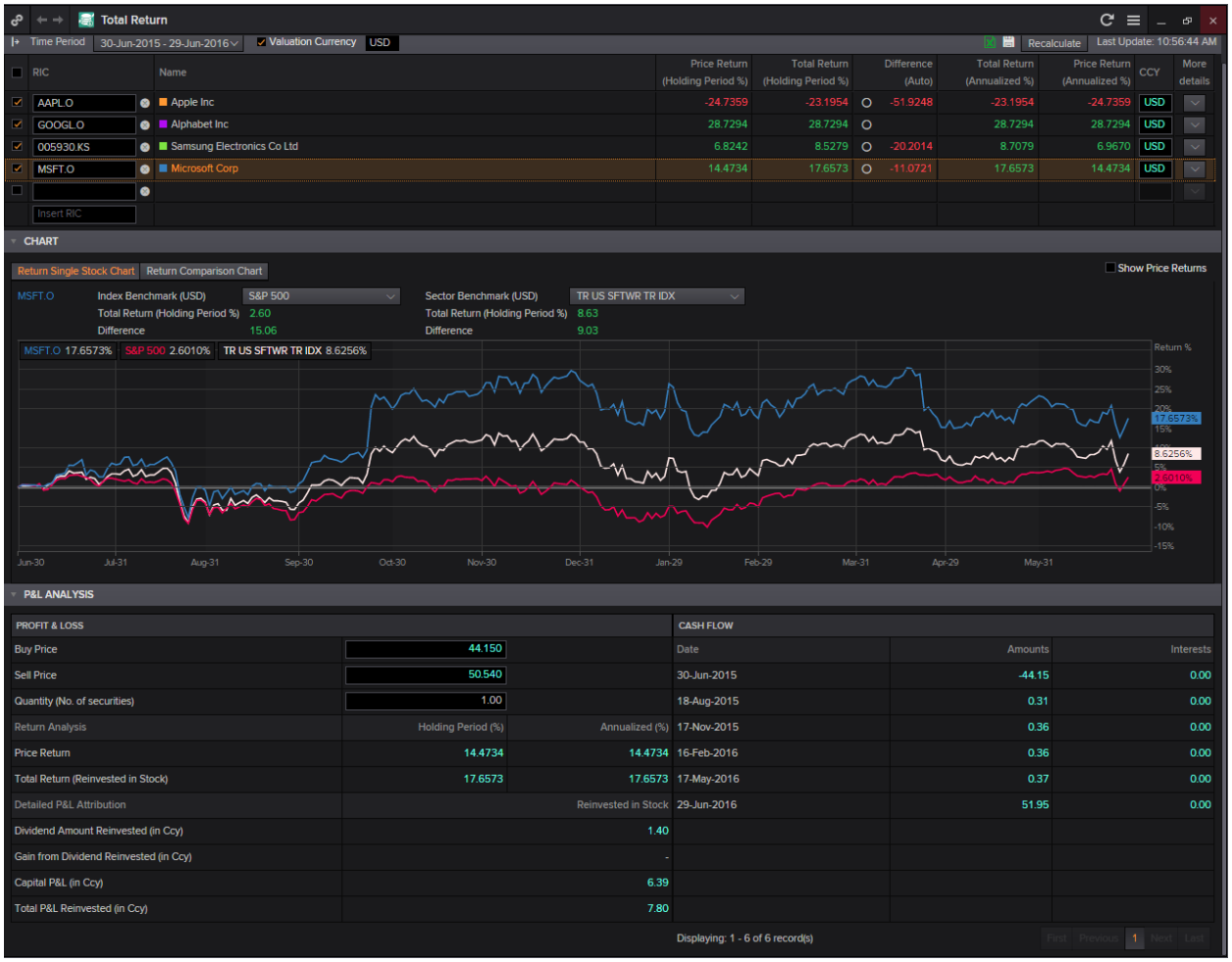
1. In the Eikon Toolbar, search **<ADVEV>**
2. Define the Events Date (Up to the Next 30 Days), Event Type
3. Search a list of RICs or Companies that you are interested in looking for .
4. If any, define the industries and countires as well as the specific content type you are interested in.

Note: If you see this  , it implies that a transcript is to be expected. A green sign indicates a live delivery, grey indicates an intraday delivery and light blue indicates near-live delivery.

Other options are as follows.  is to indicate a brief will be provided.  indicates the availability of a presentation.  is for audio,  for mp3 and  for guidance.

Total Return <TRTR>

In order measure the total return from holding an equity, Eikon has a total return calculator <TRTR> which allows users to measure the price return as well as the total return during both the holding period and the annual period.



1. In the Eikon toolbar, search <TRTR> to open the application
2. Search for the different RICs that you would like to use. (e.g. AAPL.O for Apple)
   If you do not know the RIC, you are also able to search for the company and select from the auto suggest
3. Below the table of figures would be chart area. From the chart area, you are able to choose either a return of a single stock or to do a return comparison.
4. Located at the bottom of the page is a P&L analysis which helps you to calculate the amount of profit or loss you are likely to make if you invest in this stock, after factoring in your dividend reinvestment profit.

Blended Order Book <BOB>

The blended order book brings together market data on buying and selling interests in financial instruments. It displays market data gathered from exchanges and venues, market makers and trade reporting venues.

The main purpose of this app is to display unified liquidity. You are able to set a single currency to display data from multiple venues, selecting the venue display, plot a liquidity pie chart etc.

Venue	Count	AccSize	Size	Bid	Ask	Size	AccSize	Count	Venue
SES	1	61,400	61,400	15.810	15.820	116,100	116,100	1	SES
SES	1	140,000	78,600	15.800	15.830	103,300	219,400	1	SES
SES	1	180,600	40,600	15.790	15.840	221,100	440,500	1	SES
SES	1	199,600	19,000	15.780	15.850	140,100	580,600	1	SES
SES	1	205,000	5,400	15.770	15.860	37,500	618,100	1	SES
SES	1	214,300	9,300	15.760	15.870	19,700	637,800	1	SES
SES	1	238,500	24,200	15.750	15.880	27,800	665,600	1	SES
SES	1	247,900	9,400	15.730	15.890	8,200	673,800	1	SES
SES	1	248,000	100	15.720	15.900	87,000	760,800	1	SES
SES	1	250,500	2,500	15.710	15.910	3,100	763,900	1	SES
SES	1	268,800	18,300	15.700	15.920	13,900	777,800	1	SES
SES	1	269,300	500	15.660	15.930	5,000	782,800	1	SES
SES	1	282,400	13,100	15.650	15.940	5,100	787,900	1	SES
SES	1	282,500	100	15.630	15.950	113,600	901,500	1	SES
SES	1	283,400	900	15.620	15.960	6,300	907,800	1	SES
SES	1	291,000	7,600	15.610	15.970	9,100	916,900	1	SES
SES	1	318,200	27,200	15.600	15.980	43,600	960,500	1	SES
SES	1	318,800	600	15.590	15.990	80,400	1,040,900	1	SES
SES	1	321,800	3,000	15.580	16.000	316,300	1,357,200	1	SES
SES	1	327,300	5,500	15.550	16.010	51,100	1,408,300	1	SES
	20		327,300	15.751	15.911	1,408,300		20	
	20		327,300	100.000%	100.000%	1,408,300		20	

1. In the Eikon toolbar, search **<BOB>** in order to open the application
2. In the search bar within the app, search for the RIC or the company you are interested in. A list as shown above would be generated.
3. For stocks that trade in more than one exchange, click the  sign at the top of the page in order to generate a pie chart or bar chart to represent how much of that stock was traded in each exchange.

The left side of the table represents the demand amount while the right side represents the supply. Hence the total number of shares in the market to be bought and sold at each price level is provided. Thus, the summation at the bottom of the page would signal whether or not there is more buying or selling,

More buy orders than sell orders would imply that the price will strengthen since price tends to strengthen with more buying demands and vice versa.

Prices on this page are listed from the highest bid (highest price you can sell) and the lowest ask (the cheapest you can buy).

Time and Sales Application <TAS>

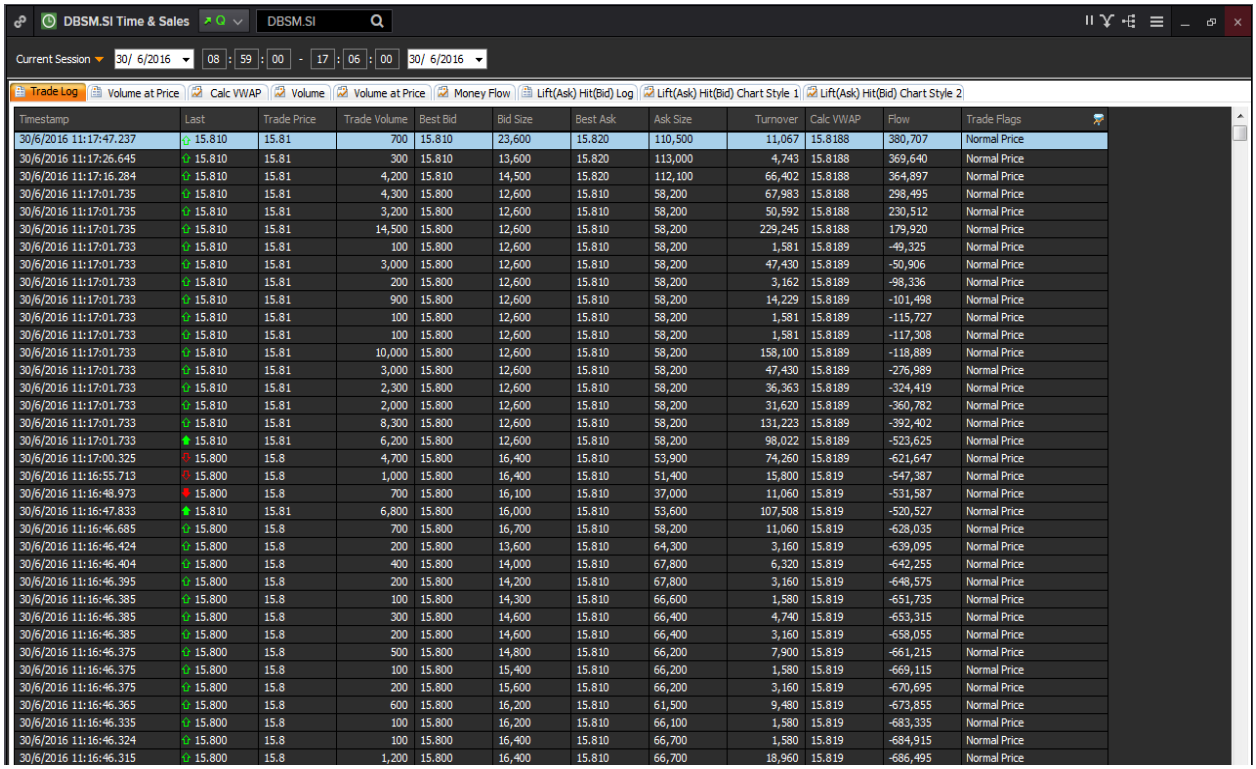
The times and sales application (TAS) will display real time "Times and Sales" as well as Volume Weighted Average Prices (VWAPs) which would act as a benchmark for traders.

The TAS includes details of individual trade; the trade price, bid and ask spread at the time of the trade and the volume of trade etc.

Note that data here can be viewed on a blended mode, which implies that results from different exchanges and venues can all be displayed on a single page.

There are two ways to obtain TAS and VWAP information.

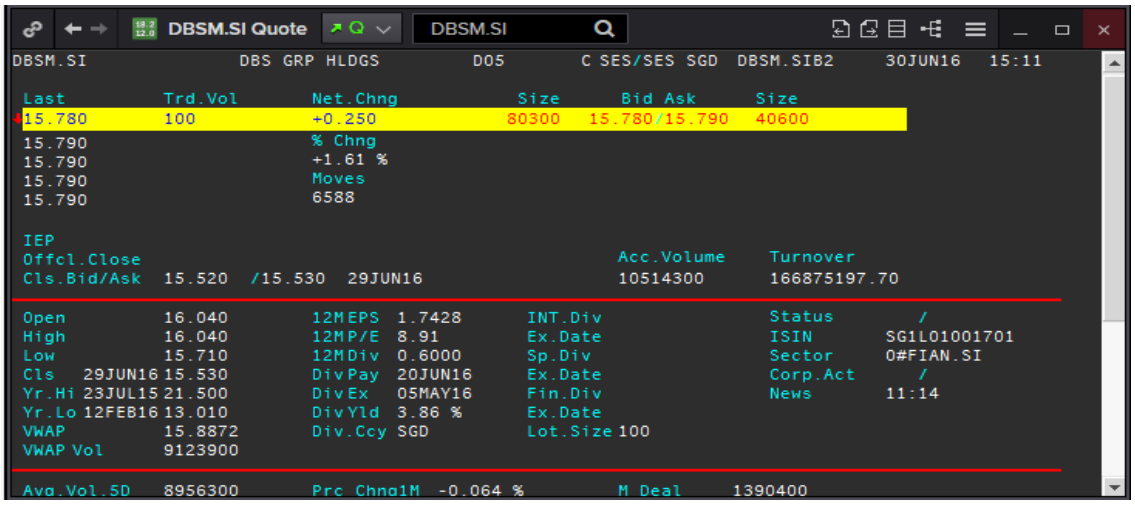
Firstly, using the <TAS> application in Eikon.



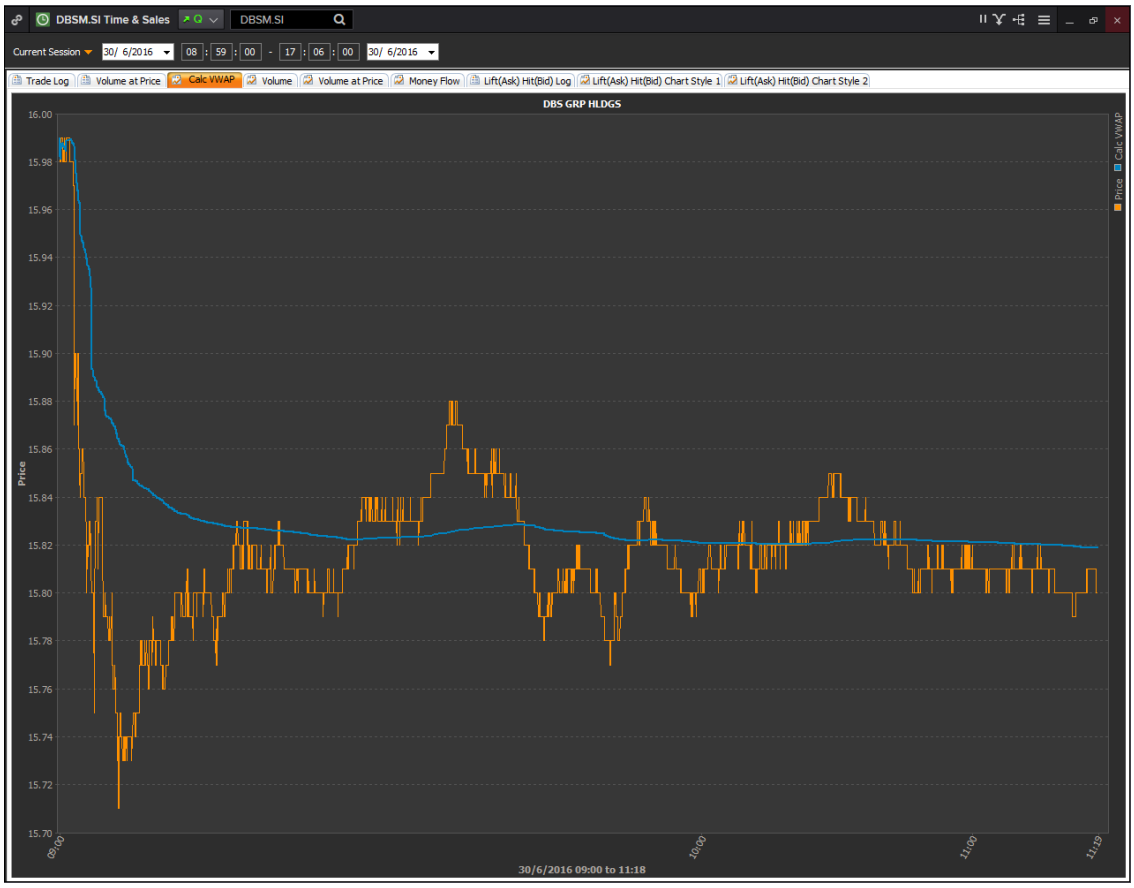
Timestamp	Last	Trade Price	Trade Volume	Best Bid	Bid Size	Best Ask	Ask Size	Turnover	Calc VWAP	Flow	Trade Flags
30/6/2016 11:17:47.237	15.810	15.81	700	15.810	23,600	15.820	110,500	11,067	15.8188	380,707	Normal Price
30/6/2016 11:17:26.645	15.810	15.81	300	15.810	13,600	15.820	113,000	4,743	15.8188	369,640	Normal Price
30/6/2016 11:17:16.284	15.810	15.81	4,200	15.810	14,500	15.820	112,100	66,402	15.8188	364,897	Normal Price
30/6/2016 11:17:01.735	15.810	15.81	4,300	15.800	12,600	15.810	58,200	67,983	15.8188	298,495	Normal Price
30/6/2016 11:17:01.735	15.810	15.81	3,200	15.800	12,600	15.810	58,200	50,592	15.8188	230,512	Normal Price
30/6/2016 11:17:01.735	15.810	15.81	14,500	15.800	12,600	15.810	58,200	229,245	15.8188	179,920	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	100	15.800	12,600	15.810	58,200	1,581	15.8189	-49,325	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	3,000	15.800	12,600	15.810	58,200	47,430	15.8189	-50,906	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	200	15.800	12,600	15.810	58,200	3,162	15.8189	-98,336	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	900	15.800	12,600	15.810	58,200	14,229	15.8189	-101,498	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	100	15.800	12,600	15.810	58,200	1,581	15.8189	-115,727	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	100	15.800	12,600	15.810	58,200	1,581	15.8189	-117,308	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	10,000	15.800	12,600	15.810	58,200	158,100	15.8189	-118,889	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	3,000	15.800	12,600	15.810	58,200	47,430	15.8189	-276,989	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	2,300	15.800	12,600	15.810	58,200	36,363	15.8189	-324,419	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	2,000	15.800	12,600	15.810	58,200	31,620	15.8189	-360,782	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	8,300	15.800	12,600	15.810	58,200	131,223	15.8189	-392,402	Normal Price
30/6/2016 11:17:01.733	15.810	15.81	6,200	15.800	12,600	15.810	58,200	98,022	15.8189	-523,625	Normal Price
30/6/2016 11:17:00.325	15.800	15.8	4,700	15.800	16,400	15.810	53,900	74,260	15.8189	-621,647	Normal Price
30/6/2016 11:16:55.713	15.800	15.8	1,000	15.800	16,400	15.810	51,400	15,800	15.819	-547,387	Normal Price
30/6/2016 11:16:48.973	15.800	15.8	700	15.800	16,100	15.810	37,000	11,060	15.819	-531,587	Normal Price
30/6/2016 11:16:47.833	15.810	15.81	6,800	15.800	16,000	15.810	53,600	107,508	15.819	-520,527	Normal Price
30/6/2016 11:16:46.685	15.800	15.8	700	15.800	16,700	15.810	58,200	11,060	15.819	-628,035	Normal Price
30/6/2016 11:16:46.424	15.800	15.8	200	15.800	13,600	15.810	64,300	3,160	15.819	-639,095	Normal Price
30/6/2016 11:16:46.404	15.800	15.8	400	15.800	14,000	15.810	67,800	6,320	15.819	-642,255	Normal Price
30/6/2016 11:16:46.395	15.800	15.8	200	15.800	14,200	15.810	67,800	3,160	15.819	-648,575	Normal Price
30/6/2016 11:16:46.385	15.800	15.8	100	15.800	14,300	15.810	66,600	1,580	15.819	-651,735	Normal Price
30/6/2016 11:16:46.385	15.800	15.8	300	15.800	14,600	15.810	66,400	4,740	15.819	-653,315	Normal Price
30/6/2016 11:16:46.385	15.800	15.8	200	15.800	14,600	15.810	66,400	3,160	15.819	-658,055	Normal Price
30/6/2016 11:16:46.375	15.800	15.8	500	15.800	14,800	15.810	66,200	7,900	15.819	-661,215	Normal Price
30/6/2016 11:16:46.375	15.800	15.8	100	15.800	15,400	15.810	66,200	1,580	15.819	-669,115	Normal Price
30/6/2016 11:16:46.375	15.800	15.8	200	15.800	15,600	15.810	66,200	3,160	15.819	-670,695	Normal Price
30/6/2016 11:16:46.365	15.800	15.8	600	15.800	16,200	15.810	61,500	9,480	15.819	-673,855	Normal Price
30/6/2016 11:16:46.335	15.800	15.8	100	15.800	16,200	15.810	66,100	1,580	15.819	-683,335	Normal Price
30/6/2016 11:16:46.324	15.800	15.8	100	15.800	16,400	15.810	66,700	1,580	15.819	-684,915	Normal Price
30/6/2016 11:16:46.315	15.800	15.8	1,200	15.800	16,400	15.810	66,700	18,960	15.819	-686,495	Normal Price

1. In the Eikon Toolbar, search **<TAS>** in order to open the time and sales application.
2. In the search bar within the application, search for the instrument you are interested in using
3. The application would list the different trades made for this specific instrument. Every time a solid green or red arrow is shown next to the price, it indicates a change in price.

4. One of the column in the page is a calculate VWAP figure which is calculated by Eikon. Note that this figure differs from that in the quote page.



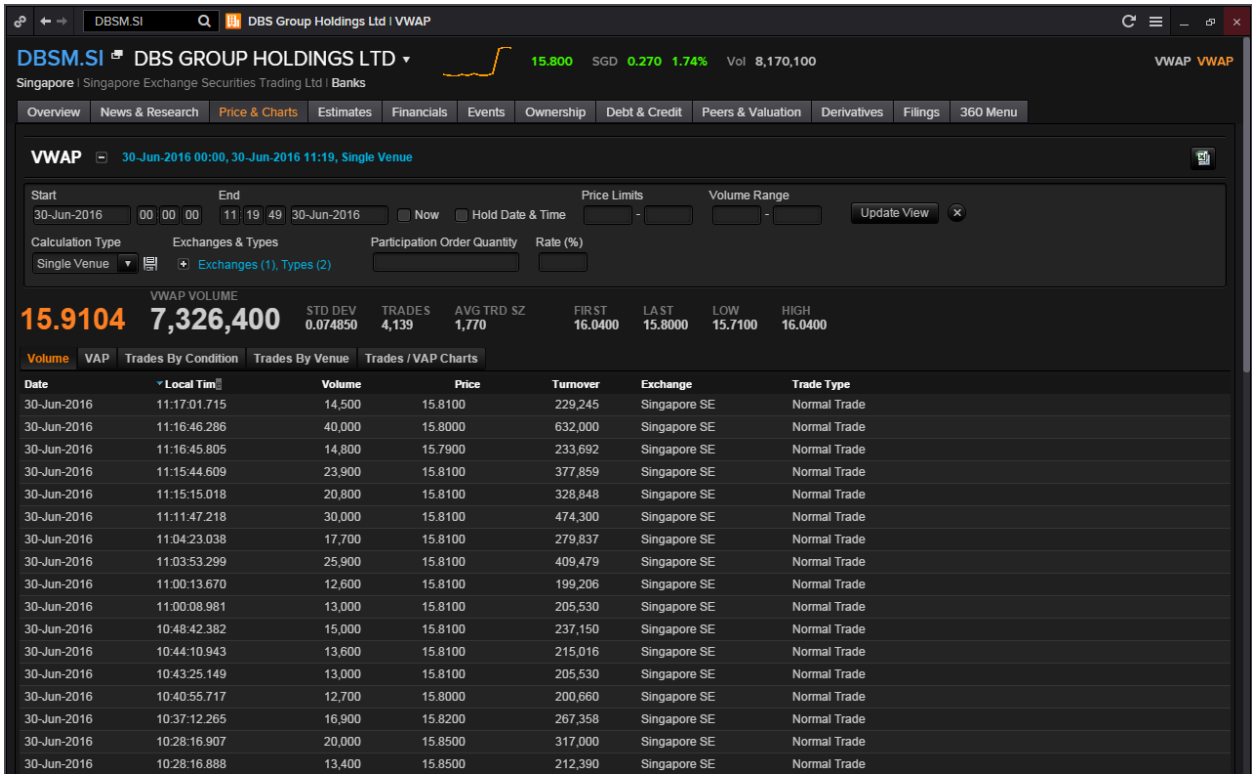
Also, on the TAS application, you are able to plot the VWAP against the traded price as shown below.

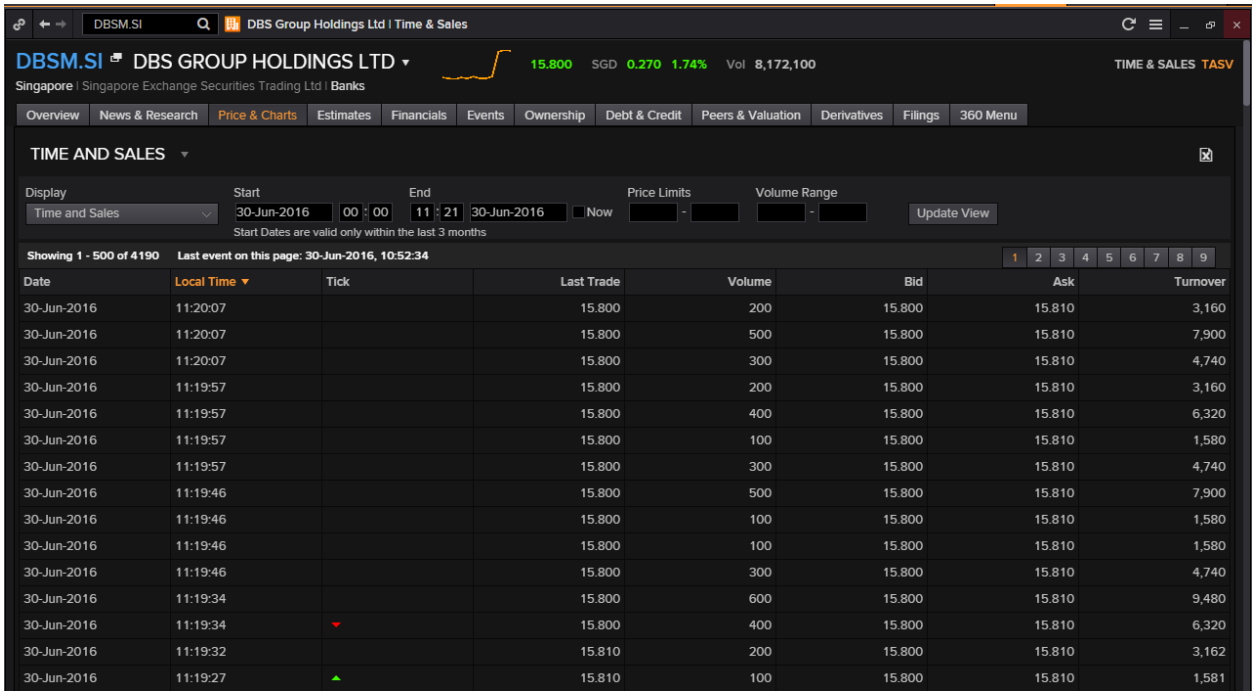


The second method to obtain TAS data is to utilise the company overview page as shown below.

1. In the Eikon toolbar, search for the company or RIC you are interested in finding.

2. Navigate **Price & Charts > TAS or VWAP** depending on which information you are seeking.





Index Movers <IMO>

The Index Movers application **<IMO>** provides fundamental, reference and real-time data in a customizable display for an index, its constituents, sectors and statistical data. The primary objective of this app is to highlight the stocks within a particular index that have the strongest impact on the index value.

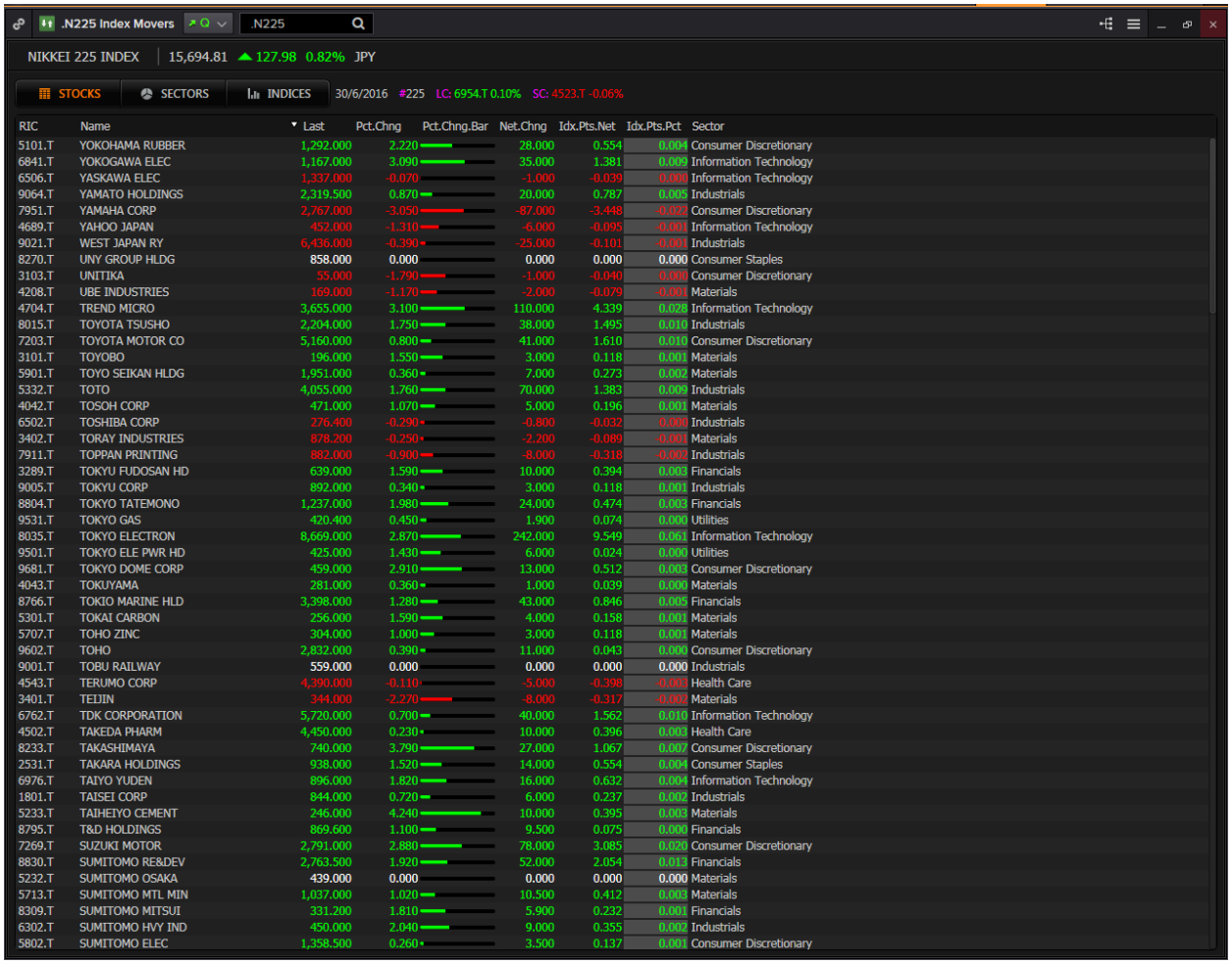
1. STOCKS: users can double-click on an individual stock to see all indices in which it is traded

2. INDICES: Users can double-click on an individual index to see all the companies whose stocks make up that index.

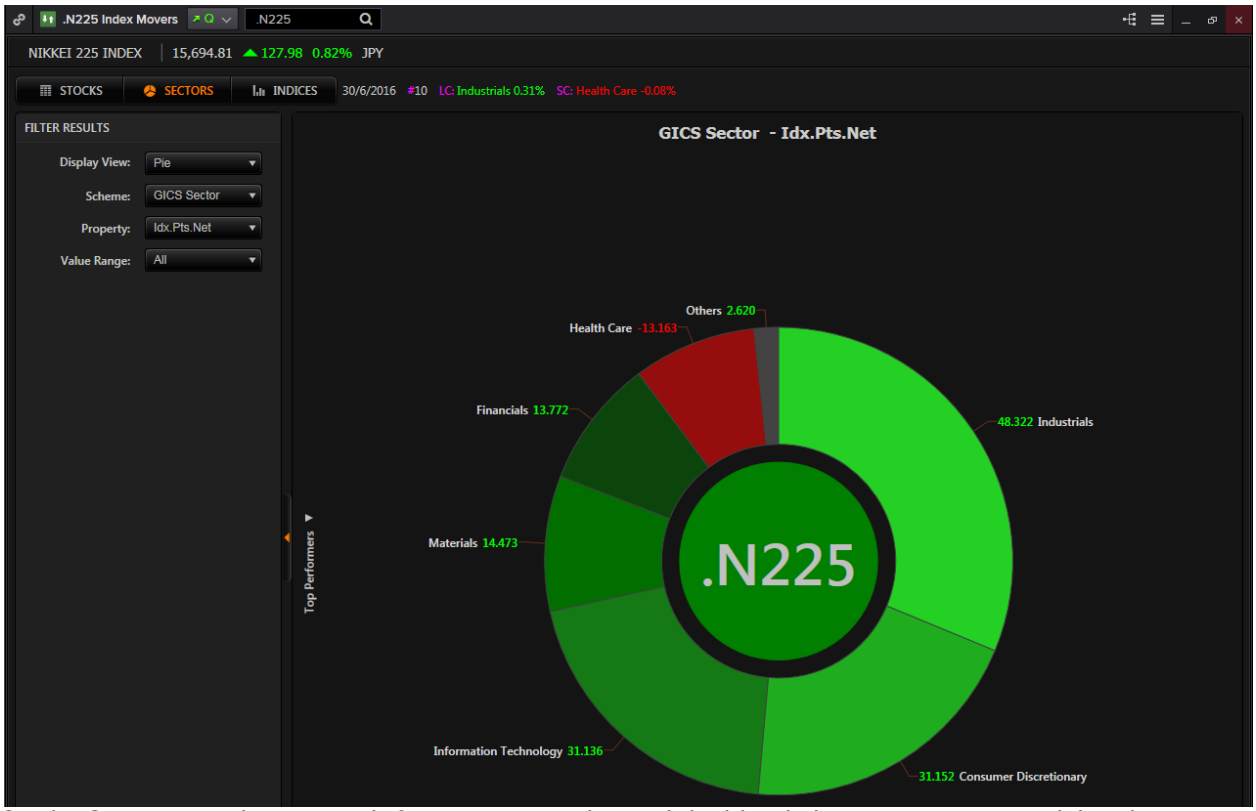
The same analysis can be performed on all indices in which a particular stock is traded worldwide, as well as a summary of the effect certain sectors within an index are having on a whole.

For example, an example of the Stocks, Sectors and Indices pages have been provided.

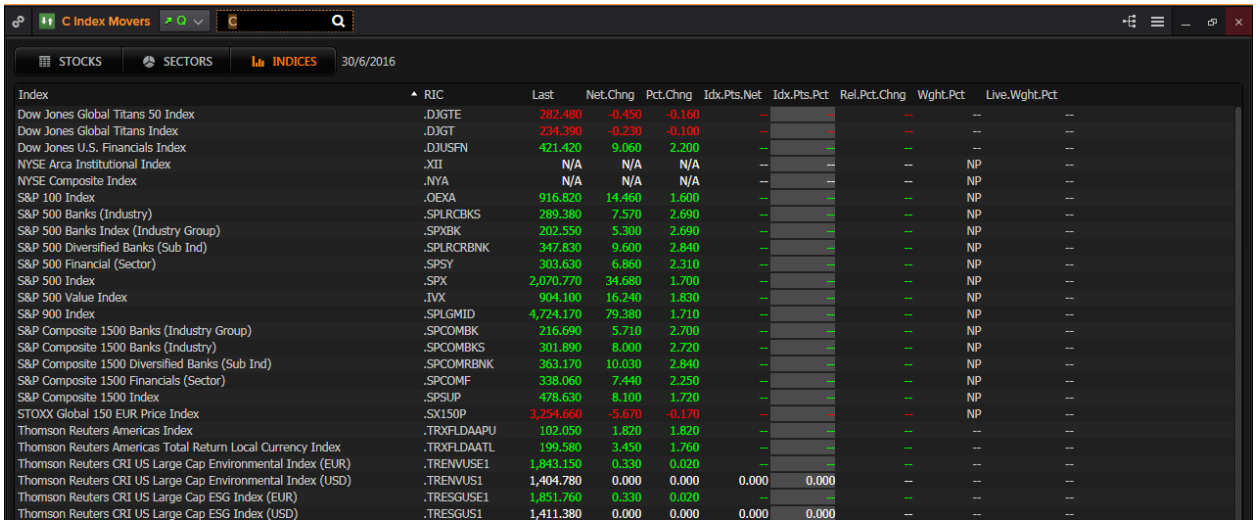
To arrive at this page, in the Eikon Toolbar, search **<IMO>**.



RIC	Name	Last	Pct.Chng	Pct.Chng.Bar	Net.Chng	Idx.Pts.Net	Idx.Pts.Pct	Sector
5101.T	YOKOHAMA RUBBER	1,292.000	2.220		28.000	0.554	0.004	Consumer Discretionary
6841.T	YOKOGAWA ELEC	1,167.000	3.090		35.000	1.381	0.009	Information Technology
6506.T	YASKAWA ELEC	1,337.000	-0.070		-1.000	-0.039	0.000	Information Technology
9064.T	YAMATO HOLDINGS	2,319.500	0.870		20.000	0.787	0.005	Industrials
7951.T	YAMAHA CORP	2,767.000	-3.050		-87.000	-3.448	-0.022	Consumer Discretionary
4689.T	YAHOO JAPAN	452.000	-1.310		-6.000	-0.095	-0.001	Information Technology
9021.T	WEST JAPAN RY	6,436.000	-0.390		-25.000	-0.101	-0.001	Industrials
8270.T	UNY GROUP HLDG	858.000	0.000		0.000	0.000	0.000	Consumer Staples
3103.T	UNITIKA	55.000	-1.790		-1.000	-0.040	0.000	Consumer Discretionary
4208.T	UBE INDUSTRIES	169.000	-1.170		-2.000	-0.079	-0.001	Materials
4704.T	TREND MICRO	3,655.000	3.100		110.000	4.339	0.028	Information Technology
8015.T	TOYOTA TSUSHO	2,204.000	1.750		38.000	1.495	0.010	Industrials
7203.T	TOYOTA MOTOR CO	5,160.000	0.800		41.000	1.610	0.010	Consumer Discretionary
3101.T	TOYOBO	196.000	1.550		3.000	0.118	0.001	Materials
5901.T	TOYO SEIKAN HLDG	1,951.000	0.360		7.000	0.273	0.002	Materials
5332.T	TOTO	4,055.000	1.760		70.000	1.383	0.009	Industrials
4042.T	TOSOH CORP	471.000	1.070		5.000	0.196	0.001	Materials
6502.T	TOSHIBA CORP	276.400	-0.290		-0.800	-0.032	0.000	Industrials
3402.T	TORAY INDUSTRIES	878.200	-0.250		-2.200	-0.089	-0.001	Materials
7911.T	TOPPAN PRINTING	882.000	-0.900		-8.000	-0.318	-0.002	Industrials
3289.T	TOKYU FUDOSAN HD	639.000	1.590		10.000	0.394	0.003	Financials
9005.T	TOKYU CORP	892.000	0.340		3.000	0.118	0.001	Industrials
8804.T	TOKYO TATEMONO	1,237.000	1.980		24.000	0.474	0.003	Financials
9531.T	TOKYO GAS	420.400	0.450		1.900	0.074	0.000	Utilities
8035.T	TOKYO ELECTRON	8,669.000	2.870		242.000	9.549	0.061	Information Technology
9501.T	TOKYO ELE PWR HD	425.000	1.430		6.000	0.024	0.000	Utilities
9681.T	TOKYO DOME CORP	459.000	2.910		13.000	0.512	0.003	Consumer Discretionary
4043.T	TOKUYAMA	281.000	0.360		1.000	0.039	0.000	Materials
8766.T	TOKIO MARINE HLD	3,398.000	1.280		43.000	0.846	0.005	Financials
5301.T	TOKAI CARBON	256.000	1.590		4.000	0.158	0.001	Materials
5707.T	TOHO ZINC	304.000	1.000		3.000	0.118	0.001	Materials
9602.T	TOHO	2,832.000	0.390		11.000	0.043	0.000	Consumer Discretionary
9001.T	TOBU RAILWAY	559.000	0.000		0.000	0.000	0.000	Industrials
4543.T	TERUMO CORP	4,390.000	-0.110		-5.000	-0.398	-0.003	Health Care
3401.T	TEIJIN	344.000	-2.270		-8.000	-0.317	-0.002	Materials
6762.T	TDK CORPORATION	5,720.000	0.700		40.000	1.562	0.010	Information Technology
4502.T	TAKEDA PHARM	4,450.000	0.230		10.000	0.396	0.003	Health Care
8233.T	TAKASHIMAYA	740.000	3.790		27.000	1.067	0.007	Consumer Discretionary
2531.T	TAKARA HOLDINGS	938.000	1.520		14.000	0.554	0.004	Consumer Staples
6976.T	TAIYO YUDEN	896.000	1.820		16.000	0.632	0.004	Information Technology
1801.T	TAISEI CORP	844.000	0.720		6.000	0.237	0.002	Industrials
5233.T	TAIHEIYO CEMENT	246.000	4.240		10.000	0.395	0.003	Materials
8795.T	T&D HOLDINGS	869.600	1.100		9.500	0.075	0.000	Financials
7269.T	SUZUKI MOTOR	2,791.000	2.880		78.000	3.085	0.020	Consumer Discretionary
8830.T	SUMITOMO RE&DEV	2,763.500	1.920		52.000	2.054	0.013	Financials
5232.T	SUMITOMO OSAKA	439.000	0.000		0.000	0.000	0.000	Materials
5713.T	SUMITOMO MTL MIN	1,037.000	1.020		10.500	0.412	0.003	Materials
8309.T	SUMITOMO MITSUI	331.200	1.810		5.900	0.232	0.001	Financials
6302.T	SUMITOMO HVY IND	450.000	2.040		9.000	0.355	0.002	Industrials
5802.T	SUMITOMO ELEC	1,358.500	0.260		3.500	0.137	0.001	Consumer Discretionary



On the Sectors pie chart, search for an equity index and double-click on any section to delve deeper into the sector, (e.g. components of Industrials).



Index	RIC	Last	Net.Chng	Pct.Chng	Idx.Pts.Net	Idx.Pts.Pct	Rel.Pct.Chng	Wght.Pct	Live.Wght.Pct
Dow Jones Global Titans 50 Index	.DJGTE	282.480	-0.450	-0.160	--	--	--	--	--
Dow Jones Global Titans Index	.DJGT	234.390	-0.230	-0.100	--	--	--	--	--
Dow Jones U.S. Financials Index	.DJUSFN	421.420	9.060	2.200	--	--	--	--	--
NYSE Arca Institutional Index	.XII	N/A	N/A	N/A	--	--	--	NP	--
NYSE Composite Index	.NYA	N/A	N/A	N/A	--	--	--	NP	--
S&P 100 Index	.OEXA	916.820	14.460	1.600	--	--	--	NP	--
S&P 500 Banks (Industry)	.SPLRCBKS	289.380	7.570	2.690	--	--	--	NP	--
S&P 500 Banks Index (Industry Group)	.SPXBK	202.550	5.300	2.690	--	--	--	NP	--
S&P 500 Diversified Banks (Sub Ind)	.SPLRCRBNK	347.830	9.600	2.840	--	--	--	NP	--
S&P 500 Financial (Sector)	.SPSY	303.630	6.860	2.310	--	--	--	NP	--
S&P 500 Index	.SPX	2,070.770	34.680	1.700	--	--	--	NP	--
S&P 500 Value Index	.IVX	904.100	16.240	1.830	--	--	--	NP	--
S&P 900 Index	.SPLGMID	4,724.170	79.380	1.710	--	--	--	NP	--
S&P Composite 1500 Banks (Industry Group)	.SPCOMBK	216.690	5.710	2.700	--	--	--	NP	--
S&P Composite 1500 Banks (Industry)	.SPCOMBKS	301.890	8.000	2.720	--	--	--	NP	--
S&P Composite 1500 Diversified Banks (Sub Ind)	.SPCOMRBNK	363.170	10.030	2.840	--	--	--	NP	--
S&P Composite 1500 Financials (Sector)	.SPCOMF	338.060	7.440	2.250	--	--	--	NP	--
S&P Composite 1500 Index	.SPSUP	478.630	8.100	1.720	--	--	--	NP	--
STOXX Global 150 EUR Price Index	.SX150P	3,254.660	-5.670	-0.170	--	--	--	NP	--
Thomson Reuters Americas Index	.TRXFLDAAPU	102.050	1.820	1.820	--	--	--	--	--
Thomson Reuters Americas Total Return Local Currency Index	.TRXFLDAATL	199.580	3.450	1.760	--	--	--	--	--
Thomson Reuters CRI US Large Cap Environmental Index (EUR)	.TRENVUSE1	1,843.150	0.330	0.020	--	--	--	--	--
Thomson Reuters CRI US Large Cap Environmental Index (USD)	.TRENVUS1	1,404.780	0.000	0.000	0.000	0.000	--	--	--
Thomson Reuters CRI US Large Cap ESG Index (EUR)	.TRESGUSE1	1,851.760	0.330	0.020	--	--	--	--	--
Thomson Reuters CRI US Large Cap ESG Index (USD)	.TRESGUS1	1,411.380	0.000	0.000	0.000	0.000	--	--	--

On the Indices page, search for a stock in order to view on which indexes it is included in as well as the impact it had on the price of that equity index.

Signal <SIGNAL>

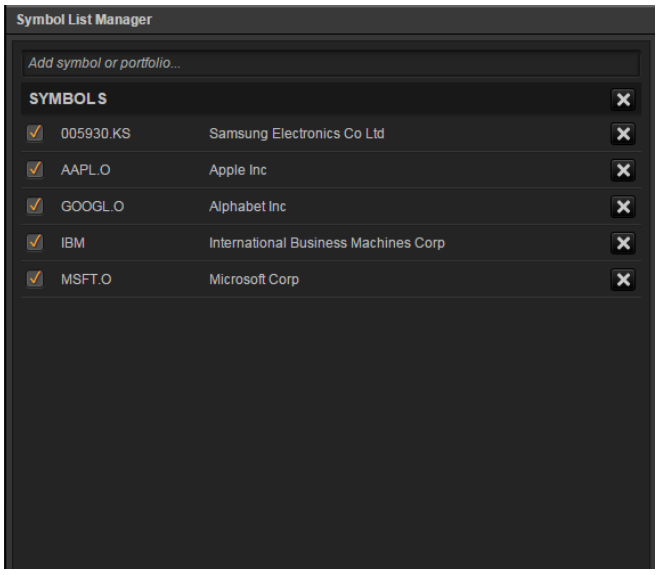
Signal monitors a list of securities real-time against one or more technical criteria and immediately alerts you in the signal panel when a security meets one or more of the conditions.

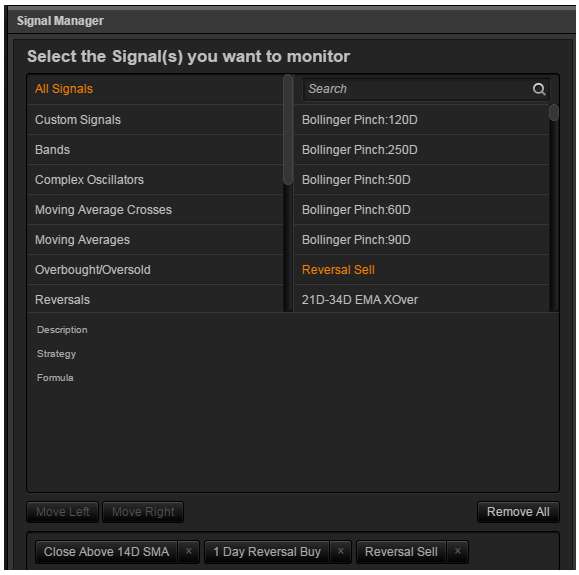
In the Eikon toolbar, search **<SIGNAL>** to open the application.

After opening the application, there are certain steps you have to take in order to set up your signal application.

1. Click the icon next to the "*Add symbol or portfolio*" option in order to customise which Portfolios, Chain RICs or Individual RICs you are interested in.

2. Click the icon and the "*Add signal*" option in order to customise the type of signal you want to monitor.





Aggregate <AGGR>

Aggregate gives users access to the Aggregates matrix which provides a useful way to analyze a metric across both sectors/industries and regions/countries at a glance.

In order to utilize this application,

1. In the Eikon Toolbar, search **<AGGR>**

2. In the leftmost column adjust the following parameters

    - All active equities
    - Geography
    - Business Classification
    - Market Cap
    - Layout of the report

3. After pressing update. You could sort the rows by the different parameters you have selected. (E.g. here, we have sorted it by the Price to Cash Flow Per Share from the lowest value to the highest value)

	P/E (Daily Time Series Ratio)	Enterprise Value To EBITDA (Daily Time Series Ratio)	Enterprise Value To Sales (Daily Time Series Ratio)	Price To Cash Flow Per Share (Daily Time Series Ratio)	Price To Book Value Per Share (Daily Time Series Ratio)	Dividend Yield, Percent, LFY
All	16.61	13.55	2.19	15.62	1.18	3.59%
Insurance (3)	15.06	7.14	6.23	4.09	1.50	2.62%
Diversified Financials (16)	17.40	11.50	5.26	6.43	1.85	3.93%
Energy (28)		12.83	1.00	6.51	0.88	7.62%
Technology Hardware & Equipment (15)	16.54	7.55	0.36	6.90	1.69	5.47%
Transportation (20)	23.75	10.94	1.29	7.12	1.28	4.46%
Household & Personal Products (2)	21.84	5.51	0.53	7.15	1.26	2.90%
Materials (16)	29.27	11.21	1.10	7.39	0.79	3.17%
Retailing (19)	15.43	8.79	1.13	7.42	1.54	3.68%
Real Estate (72)	11.04	20.59	7.00	8.88	0.78	4.40%
Consumer Services (20)	29.70	12.86	3.59	9.66	0.77	2.59%
Food, Beverage & Tobacco (17)	19.67	12.07	0.82	10.34	1.09	2.39%
Telecommunication Services (4)	16.19	13.37	3.98	12.88	2.73	4.69%
Utilities (4)	26.14	13.58	3.66	13.48	0.89	3.43%
Automobiles & Components (1)	16.06	10.72	2.74	13.68	3.90	2.42%
Commercial & Professional Services (20)	29.52	12.31	1.44	16.07	1.81	3.15%
Software & Services (7)	17.58	10.83	2.57	16.43	3.10	6.61%
Consumer Durables & Apparel (1)	108.37	26.74	0.67	22.63	1.75	
Pharmaceuticals, Biotechnology & Life Sci...	12.63	868.35	3.36	25.41	1.08	2.34%
Semiconductors & Semiconductor Equipm...		28.71	7.90	25.56	2.90	0.73%
Health Care Equipment & Services (13)	46.60	23.62	5.23	30.59	2.67	2.17%
Media (4)	18.27	14.86	6.34	36.05	1.55	14.20%
Capital Goods (60)	20.36	17.07	1.37		1.02	6.34%
Food & Staples Retailing (5)	122.66	16.67	0.84		1.23	2.89%
Banks (3)	9.39	7.33	3.83		0.96	2.98%

Monitor Application <MON>

In Eikon, users are able to utilise the Monitor application in order to track different instruments such as single RICs, equity indexes etc. Here you can specify the different columns you wish to view as well as to choose which specific instruments you are interested in.

Monitor 2

RIC	Name		Last	Net Chng	Pct.Chng	Company Market Cap	GICS Sector Name
CACT.SI	CAPITALAND TRUST		1.480	+0.025	1.72 %	4284934342.67377	Financials
CATL.SI	CAPITALAND		3.060	+0.050	1.66 %	12816443782.3915	Financials
CMDG.SI	COMFORTDELGRO	▲	2.750	+0.060	2.23 %	5776736665.61129	Industrials
CMLT.SI	CAPITALAND MALL		2.160	-0.020	-0.92 %	7692552953.03049	Financials
CTDM.SI	CITY DEVT LTD		8.200			7427612018.63863	Financials
DBSM.SI	DBS GRP HLDGS		15.800	+0.270	1.74 %	39162796630.3072	Financials
GAGR.SI	GOLDEN AGRI		0.350	+0.015	4.48 %	4284049082.18538	Consumer Staples
GENS.SI	GENTING SPORE		0.730	+0.025	3.55 %	8493517307.44836	Consumer Discretionary
GLPL.SI	GLOBAL LOG PROP		1.795	+0.015	0.84 %	8589826888.34883	Financials
HKLD.SI	HONGKONG LAND	▼	6.060	+0.070	1.17 %	14093312612.2	Financials
HPHT.SI	HUTCHISON PORT		0.450	+0.015	3.45 %	3789328944.57	Industrials
JCYC.SI	JARDINE C&C	▼	36.480	+0.980	2.76 %	13976959168.8113	Consumer Discretionary
KPLM.SI	KEPPEL CORP		5.480	+0.070	1.29 %	9797092721.75346	Industrials
OCBC.SI	OCBC		8.650	+0.160	1.88 %	35467911997.0088	Financials
SATS.SI	SATS LTD		4.130	+0.030	0.73 %	4590917016.37353	Industrials
SCIL.SI	SEMBCORP INDUST		2.840	+0.030	1.07 %	5003702712.95002	Industrials
SCMN.SI	SEMBCORP MARINE		1.560	+0.015	0.97 %	3216269628.67546	Industrials
SGXL.SI	SGX		7.640	+0.190	2.55 %	7953049630.77537	Financials
SIAE.SI	SIA ENGR		3.700	+0.020	0.54 %	4118790306.75292	Industrials
SIAL.SI	SIA LTD		10.680	+0.140	1.33 %	12597821972.6097	Industrials
SPRM.SI	SPORE PRESS HLDG		3.950	+0.100	2.60 %	6138812963.58271	Consumer Discretionary
STAR.SI	STARHUB		3.790	+0.040	1.07 %	6468224623.64486	Telecommunication Services
STEG.SI	ST ENGRG	▲	3.140	+0.050	1.62 %	9611425191.01221	Industrials
STEL.SI	SINGTEL		4.130	+0.090	2.23 %	64164167342.7452	Telecommunication Services
TBEV.SI	THAI BEVERAGE		0.910			22762273464.4098	Consumer Staples
UOBH.SI	UOB LTD		18.380	+0.420	2.34 %	28975676711.0947	Financials
UTOS.SI	UOL LTD		5.450	+0.080	1.49 %	4311373325.47923	Financials
WLIL.SI	WILMAR INTL	▼	3.270	+0.040	1.24 %	20603488547.488	Consumer Staples
YAZG.SI	YANGZIJIANG		0.895	+0.005	0.56 %	3401872657.90598	Industrials

1. In the Eikon toolbar, search **<MON>** to open the Monitor application.
2. By default, the RIC, Name, Last Price, Net and Percentage change columns will be displayed. However, you are able to specify any other information available to be displayed.

You are also able to change the format of %Change column into that of a bar for better visual representation, sort by GICS sector and to add headers to separate sectors.

Social Media Monitor <SOCIAL>

The Social Media Monitor **<SOCIAL>** utilises text mining in order to view what is trending in the markets from a social perspective over the last few days.

You are able to choose different instruments by searching in the in-app search bar as well as choose between a sentiment line and bar chart for you visually view the positivity or negativity about a certain company in the social media network. This would give you an idea about the market sentiment with regards to a certain company and hence can help predict possible stock price movements.

1. In the Eikon Toolbar, search **<SOCIAL>** to open the social monitor application
2. Select the different instruments and click on the symbol to display it on the sentiment line or bar chart.
3. The leftmost column would display the latest tweets and posts about the company of interest.