Finance Data

Thomson Reuters Eikon

Equities and Fixed Income

Introduction Manual

Universiteit Utrecht

Contents

1.   Introduction

1.1   When do I use Eikon?

Thomson Reuters Eikon is a database from Thomson Reuters which contains most of the data relevant for financial analysis. I is available through the software itself or through an Excel plug-in. Eikon is the most comprehensive platform available at the UU and useful in a lot of situations. However, the access is limited to 2 accounts for the whole university. Therefore, it is sometimes better to use alternative programs. Factset, for instance, is very similar to Eikon and can be accessed at any time

1.2   Request access for Eikon

A login-password combination can be asked by sending an email to financedata.use@uu.nl (further information about this process should be available on Blackboard).

Since we are limited to 2 accounts for the whole school, coordination is necessary among students:

- **If you are in Spinoza 1.01 with other people, ask if someone is using Eikon to coordinate.**

- **The log in information sent to you is not your personal. If anyone is using it already, you have to wait**

- **Do not force logout anyone unless you are alone in the room.**

1.3   Where can I get more help with Eikon?

If you need more support you can always contact the finance team of the University by writing an email to

financedata.use@uu.nl

2.   The Excel Plug-in

2.1   Getting Started:

Eikon in Excel can be opened by simply searching for 'Eikon.exe - Excel' in the start menu of Windows. This will open up a Excel sheet with and additional ribbon in the top menu. The plug-in for Eikon is denoted as 'Thomson Reuters'. In the top right corner, you can select 'Sign Up' in order to log in and use Eikon. Log in with the combination you have received per email (see section 1.2). You are not accessing Eikon via Excel.
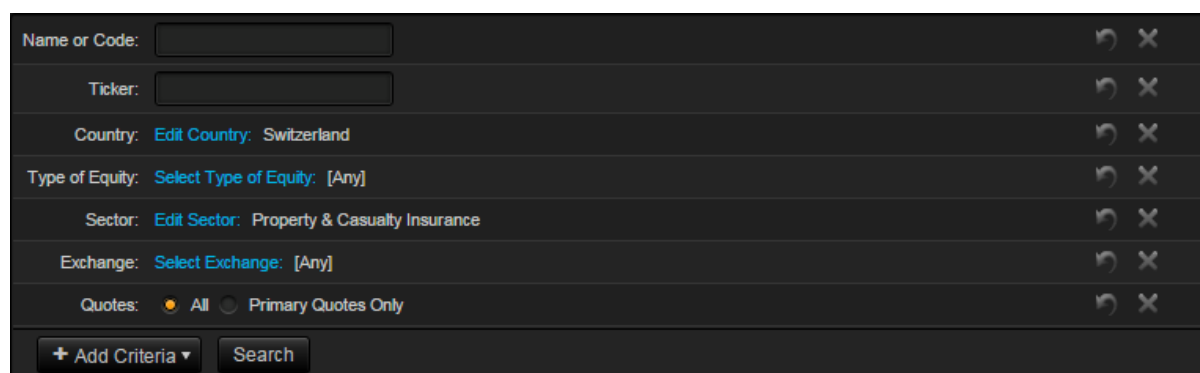
2.2   Formula Builder

2.2.1   A standard request

The easiest way to access and download data in Eikon is via the formula builder. Eikon uses Excel functions which will connect to the database and query the data requested by you. (Section 4.4 explains how the formula works exactly)

Opening up the formula builder by clicking on the 'Build Formula' symbol will open up a window. Eikon's formula builder works quite similar to other data platforms: First, you select the companies you want data from, then you select the variable. In Eikon, the various companies are called **Instuments**. The different variables (or columns) are called **Data Items.**

In the top bar you can enter your instruments. You can either directly search for them by name, ticker etc. or you can click on the small ![filter icon] on the side. This will open a window which will allow you to select different companies with filters. For this guide we will select the companies of **Swiss property and causality insurance companies.** To do so we enter 'Switzerland' as a country and 'Property and Causality Insurance' as a sector. By clicking on the 'Search' button it will search for companies that match your criteria. This will give you a list of various companies, in this case 60.

You can now select the for you relevant companies. In our case, we want them all, so we click on the [Send All] button. We close this window now and we see the selected companies are listed as instruments.

TIP: *Use the ´Screener´ app to select all the equities from one Stock Exchange. For further info, check section 3.1.*

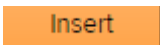| Instruments: | AWH | MLFIR.PA | VAHN.S | AWH.N | VAHN.F | AWH.TH | AWH.Z | AWH.P | AWH.DG | AWH.B | AWH.ZY | AWH.MW | AWH.DY | AWH.PH |
| | VAHNz.TQ | VAHN.SG | VAHNz.CHI | AWH.C | VAHNz.BS | VAHNCHF.Lp | T4K.F | MLFIR.PA1 | T4K.BE | AWH.DF | VAHNz.BCO | VAHN.MB | | |
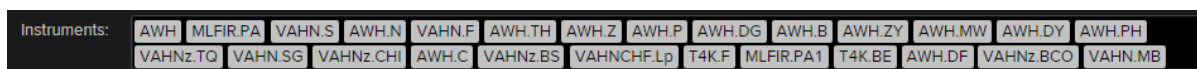
Picture 1: Several instruments are selected

Now we have to choose what information we want to know from this data, the data items. One way is to simply search for our data item in the search bar. This seems straight forward, but can lead to confusion sometimes as its sometimes hard to know which item you want exactly. Sometimes it makes sense to first select a category to narrow down your search.

Finding the right data item is mostly a trial and error process. It helps a lot to read the describtion to an item first before using it.

For the example of this manual we are interested in the total revenue of these equities. As this is quite straight forward we just enter 'Total revenue' in the searchbar. We click on the top search item and on the right-hand side we can now see a description to the item. Once we are content with the data item we can hover over the bar in the Fields list and a blue 'add' button should appear. This will add this item to the formula, which we can see on the bottom of the screen. It is possible to add other data items of course, but in our example we are done for now. We insert the formula to Excel by hitting the [Insert] button on the right bottom.

Updated at 12:00:09		
		Total Revenue
	MLFIR.PA	NULL
	VAHN.S	1280222000
	VAHN.F	1280222000
	VAHN.SG	1280222000
	VAHNz.BS	1280222000
	VAHNz.CH	1280222000
	VAHNz.TC	1280222000
	MLFIR.PA:	NULL
	0QN7s.TRI	1280222000
	VAHNN.M	1280222000
	VAHNz.BC	1280222000
	VAHN.DEL	1280222000
	VAHN.MB	1280222000
	VAHN.BN	1280222000
	ZGH.UNL	NULL
	AWH.N^H	2576400000
	T4K.F^G17	2576400000
	VAHNCHF	1280222000
	AWH.P^H:	2576400000
	AWH.MW	2576400000
	AWH.TH^I	2576400000
	AWHHF.PI	2576400000
	AWH.ZY^I	2576400000

As a result we retrieve the total revenue for all the equities we have selected [1]. Unfortunately, we don't know which date the data is from. In order to specifiy the date that we want to download, we need to further adjust our formula. Therefore, we select the cell in which we build our formula, and click on the formula builder again.

Now, select Parameters & Quick Functions and specify your date. By enabling "Series" get the formula to retrieve a time span. Eikon has different options to enter a time span. You can select specific dates, or also use relative values.

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[1] Please note that most of the values are the same since some of the RICs direct to the same company, but listed on a different stock exchange.
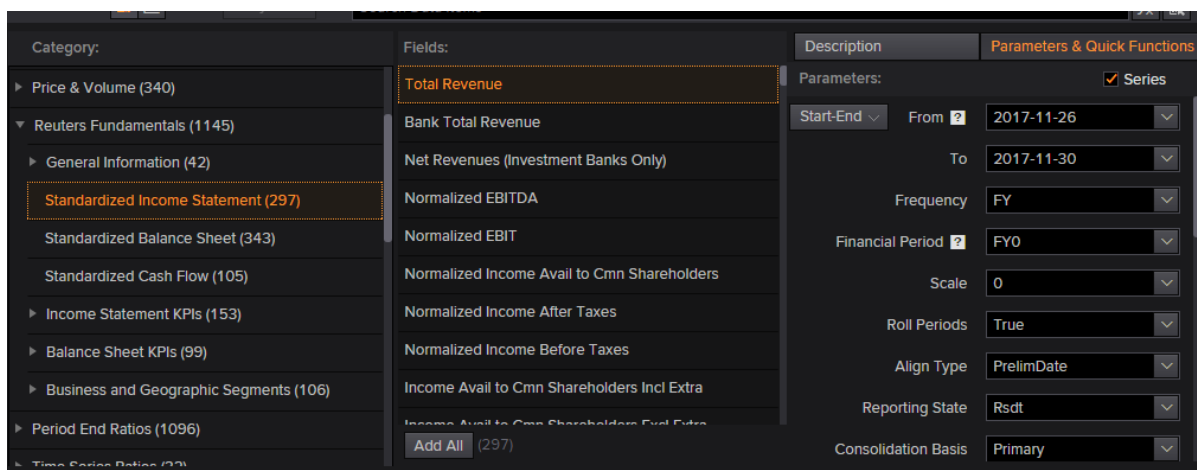
Once the parameters are set up, the formula will be adjusted automatically. Once you are done, click the Insert button again to see the result. You will notice that you still cannot see the specific date of each data point. In order to change this, please refer to section 2.2.3 Layout options.

2.2.2   Time Series request

The formula builder also has two different options for time series. The first way is to change the data items to time series ones. To do so, click on the button in the top left corner. This will give you a different selection of data items. This option is mostly used for prices and returns. For instance, the close price can be found in the 'Common' section. In the top bar it is possible to select the frequency of data to retrieve. Choose the interval you want in order to get the right amount of data. To define a certain time period we click on the button and select a start and end date.
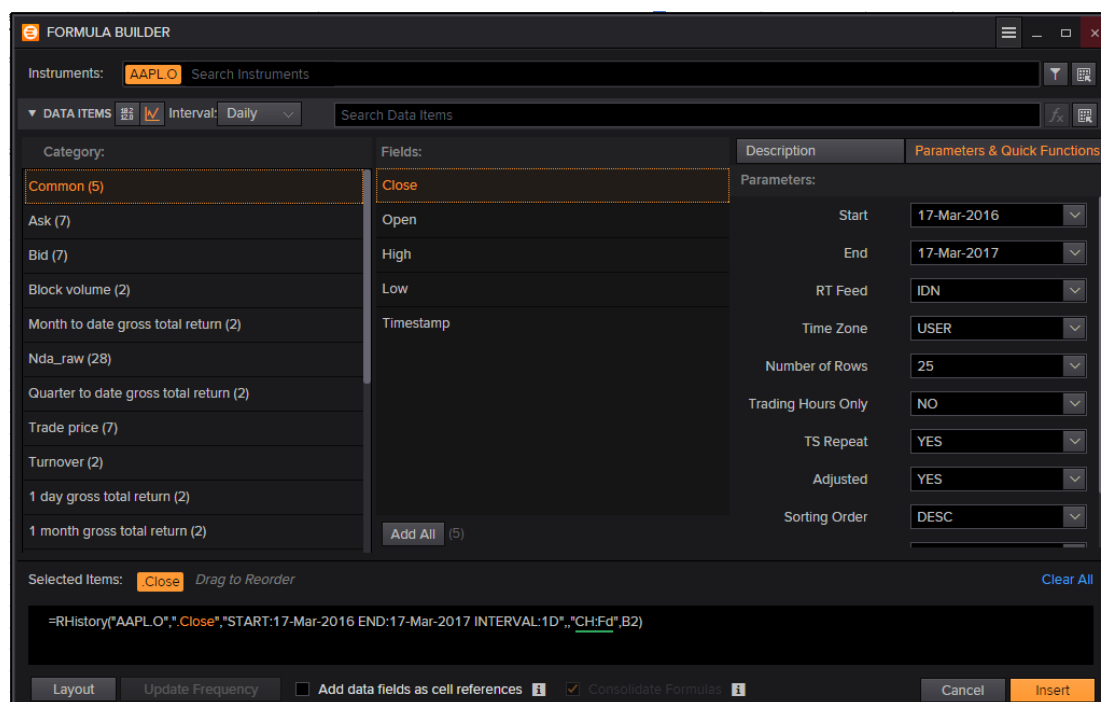
Picture 2: TS Request for 1y

However, one will quickly see that barely any of the data items are available in the time series request. For instance, there's no data item for the total revenue available as TS item. This is because Eikon differs between "actual" time series data and "several static requests from different periods". Mostly, "actual" time series data are defined as items that seem rather useless without including time as a variable. On the other hand, there are items that can be interesting to look only at one time. Those are found in the menu for static data. But by adjusting the parameters of the data item, it is possible to download static data from different period, therefore including a time factor.

2.2.3 Layout options

One aspect that can be quite tricky in the formula builder is getting the layout right. Sometimes it is straight forward, for instance if you have only one instrument and only one data item. (This will return a 1x1 matrix). But once you have several instruments with several data items and also time series data, you have to be careful to not get confused by all the data.

To show you a way to do it, let´s assume we have 3 instruments, and we want to look at the closing price and the revenue mean for the last 25 dates. Entering this in the formula builder is not too difficult, but when we just insert this we end up with something looking like this:

| | A1 | ▼ | *fx* | =TR("UBSG.S;CSGN.S;BAER.S";"TR.RevenueMean;TR.PriceClose";"SDate=0 EDate=-25 Frq=C Curn=CHF Cŀ |

	A	B	C	D	E
Updated at 12:48:26					
			Revenue - Mean	Price Close	
		UBSG.S	29220375310	15,6	
		UBSG.S	29258259920	15,53	
		UBSG.S	29245413770	15,8	
		UBSG.S	29245413770	15,89	
		UBSG.S	29245413770	16,04	
		UBSG.S	29245413770	16,04	
		UBSG.S	29245413770	16,04	
		UBSG.S	29245413770	16,14	
		UBSG.S	29242692350	16,17	
		UBSG.S	29242692350	15,98	
		UBSG.S	29242884650	16,09	
		UBSG.S	29242884650	16,17	
		UBSG.S	29242884650	16,17	
		UBSG.S	29242884650	16,17	
		UBSG.S	29242884650	16,11	
		UBSG.S	29242884650	15,92	
		UBSG.S	29242884650	15,9	
		UBSG.S	29242884650	16,02	
		UBSG.S	29242884650	16,22	
		UBSG.S	29242884650	16,22	
		UBSG.S	29242884650	16,22	
		UBSG.S	29242884650	16,13	
		UBSG.S	29242884650	16,2	
		UBSG.S	29242884650	15,47	
		UBSG.S	29242884650	15,44	

Picture 3: This is not exactly what we´re looking for

The problem is that we have not yet specified how we want Excel to show our data. To change that we go back into the formula builder and click on Layout in the bottom left corner. Here we can select what we want to see and how we want to see it. First of all, we include the item ´Cal Date´ into the **Rows** option. This will add the date stamps to our time series data. But also we switch the ´Instrument´ item to the **Columns** so that we have the different instruments as columns and only the time stamps in rows. In the spreadsheet below we get a preview of how it will look like. It is also possible to transpose the data, or change the destination cell.

TIP: To transform an excel file from Eikon queries into a Stata dataset in panel form, it is convenient to download each individual variable (e.g., assets, liabilities) in a different spreadsheet containing that variable for all firms over time. This also reduces the risk of crashes (less data for query).
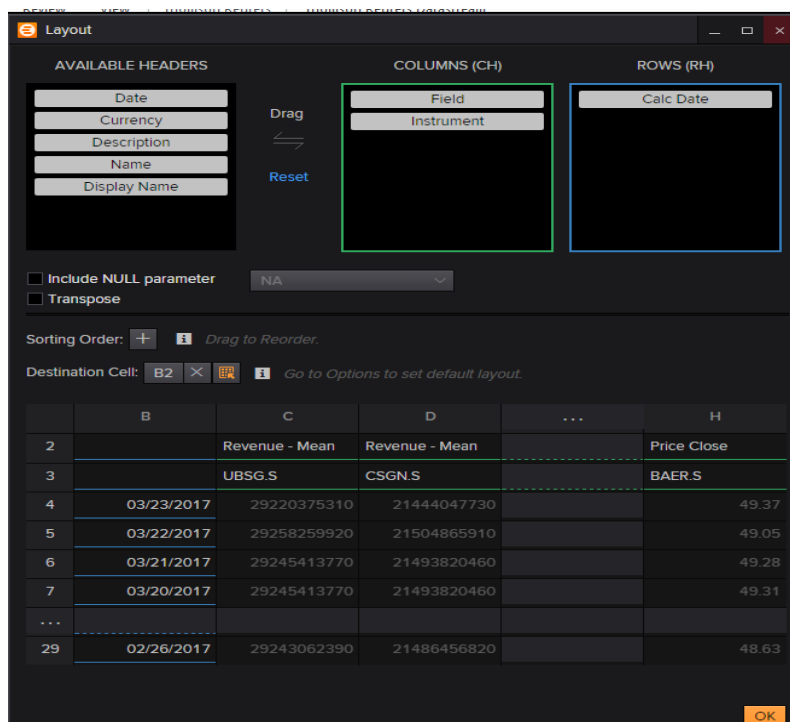
Picture 4: This looks much better already

Once we insert it into Excel we get a proper spreadsheet which is easy to read:

Updated at 13:01:01		Revenue - Mean	Revenue - Mean	Revenue - Mean	Price Close	Price Close	Price Close
		UBSG.S	CSGN.S	BAER.S	UBSG.S	CSGN.S	BAER.S
	23-3-2017	29220375310	21444047730	3091852850	15,6	14,56	49,37
	22-3-2017	29258259920	21504865910	3107852850	15,53	14,85	49,05
	21-3-2017	29245413770	21493820460	3105178010	15,8	15,12	49,28
	20-3-2017	29245413770	21493820460	3105178010	15,89	15,33	49,31
	19-3-2017	29245413770	21493820460	3105178010	16,04	15,48	49,25
	18-3-2017	29245413770	21493820460	3105178010	16,04	15,48	49,25
	17-3-2017	29245413770	21493820460	3096010740	16,04	15,48	49,25
	16-3-2017	29245413770	21493820460	3096010740	16,14	15,5	49,83
	15-3-2017	29242692350	21493820460	3096010740	16,17	15,6	49,98
	14-3-2017	29242692350	21493820460	3096010740	15,98	15,37	49,07
	13-3-2017	29242884650	21490911360	3096010740	16,09	15,52	49,7
	12-3-2017	29242884650	21490911360	3096010740	16,17	15,58	49,34
	11-3-2017	29242884650	21490911360	3096010740	16,17	15,58	49,34
	10-3-2017	29242884650	21490911360	3096010740	16,17	15,58	49,34
	9-3-2017	29242884650	21490911360	3096010740	16,11	15,45	49
	8-3-2017	29242884650	21490911360	3096010740	15,92	15,43	48,59
	7-3-2017	29242884650	21490911360	3096010740	15,9	15,21	48,7
	6-3-2017	29242884650	21490911360	3096010740	16,02	15,27	49,09
	5-3-2017	29242884650	21490911360	3096010740	16,22	15,95	49,25
	4-3-2017	29242884650	21490911360	3096010740	16,22	15,95	49,25
	3-3-2017	29242884650	21490911360	3096010740	16,22	15,95	49,25
	2-3-2017	29242884650	21490184090	3096010740	16,13	15,77	49,3
	1-3-2017	29242884650	21490184090	3096010740	16,2	15,93	49,28
	28-2-2017	29242884650	21490184090	3096010740	15,47	15,15	49,15

Picture 5: Finished layout

TIP: *By putting Instrument over Field in Columns we can change how the data is aligned on the x-axis. In that case, it would first put both items from UBS and then both items from Credit Suisse.*

TIP: *If you are encountering a problem that different firms reported their numbers at different dates, check out Appendix A.*

2.3 Templates

Thomson Reuters Eikon includes templates that can be used to directly download data or also to get an idea how to build your specific formula. The Template Library can be found next to the formula builder button in Excel. There are 226 templates available and they are categorized in the menu on the left. Read through the description to find the fitting one for you and open it with the `Open` button. This will open a new Excel sheet with the template.

TIP: Backwards Engineering: If the template does not yet fully fit your needs, find the cell where the formula is entered and try to alter it with the formula builder. The cell is often denoted with ´ Updated...´

2.4 IPO Price – Deal Screener

The formula builder does have a data item to download the IPO price on an equity, but unfortunately, the price is almost never available. Nevertheless, there is a way to retrieve IPO data with Eikon.

2.4.1 Install Deal Screener

Before we can start downloading data we first need to install an extension to Eikon. In the 'Thomson Reuter' menu of Excel we select 'Options'. This is the settings menu for Eikon. In the menu to the left we go on 'Apps'. This is where we see the various apps that we are using in Excel. The app we want to download is called 'Deal Analytics'. By clicking on 'enable' it will download the app. After doing so the system asks us to restart Excel and Eikon.

2.4.2 Using Deal Screener

In the Eikon navigation in Excel there is now a new section available. It's called 'Deals' and allows us to open the 'Deal Screener'. In order to retrieve an IPO price we have to open the 'Deal Screener' which will open up a window from Eikon. The first thing we have to do is changing the universe from 'M&A Deals' to 'Equity deals'. This will access the database of all the equity deals in a long time. We can now add filters to it and narrow the list down. Please mind that there is a maximum of **3000 equities** that you can download at a time.

There is one filter that is necessary in order to get IPO prices. Under 'Popular Filter' we can select 'Issue type'. This is where we enter 'IPO' as a criterion so it only selects IPO deals and excludes everything else.

All the other filters can be adjusted manually. In this example we select 'Canada' as an Issuer Nation/Region and 'Banks' as an Issuer TRBC Industry. In the end it should look something like this:
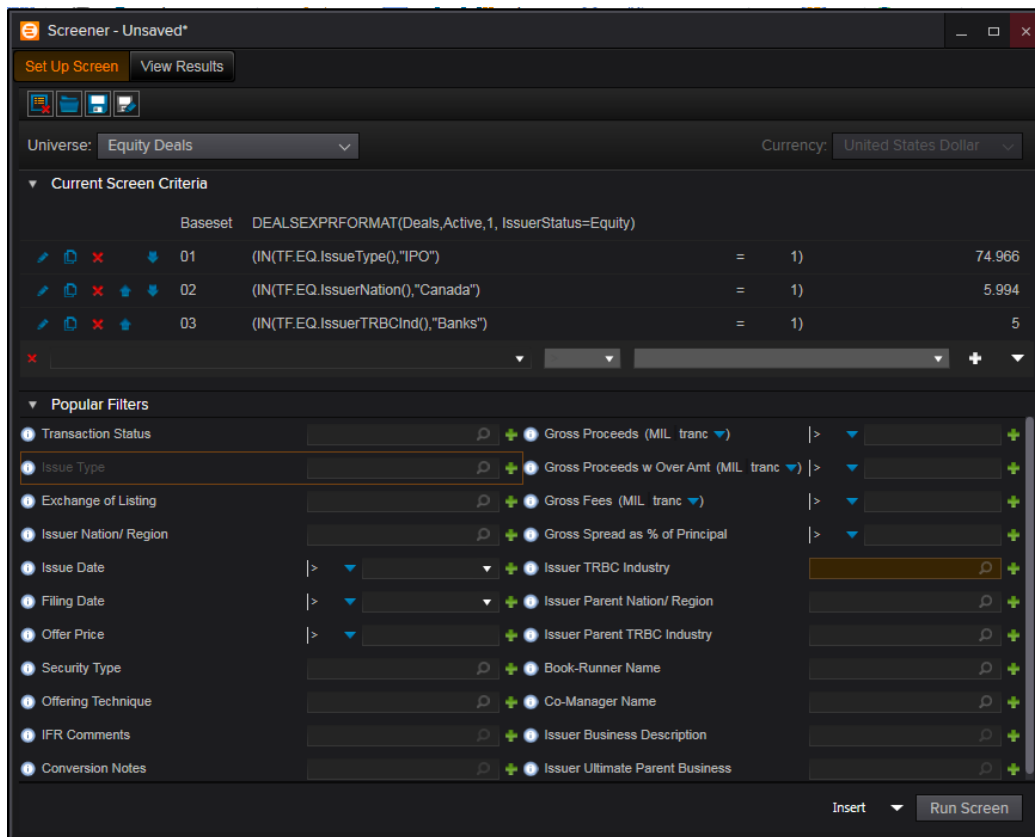
Picture 6: Deals request

After selecting the filter, we can run our search request by clicking on 'Run Screen'. This will show us our selection of 5 banks. We can see things like the date of the IPO, the name of the issuer, but not yet the IPO price. To resolve this we click on Build Report. There we can select the different columns that we want to include. In order to get the offer price, we add 'Offer Price' to the right side.
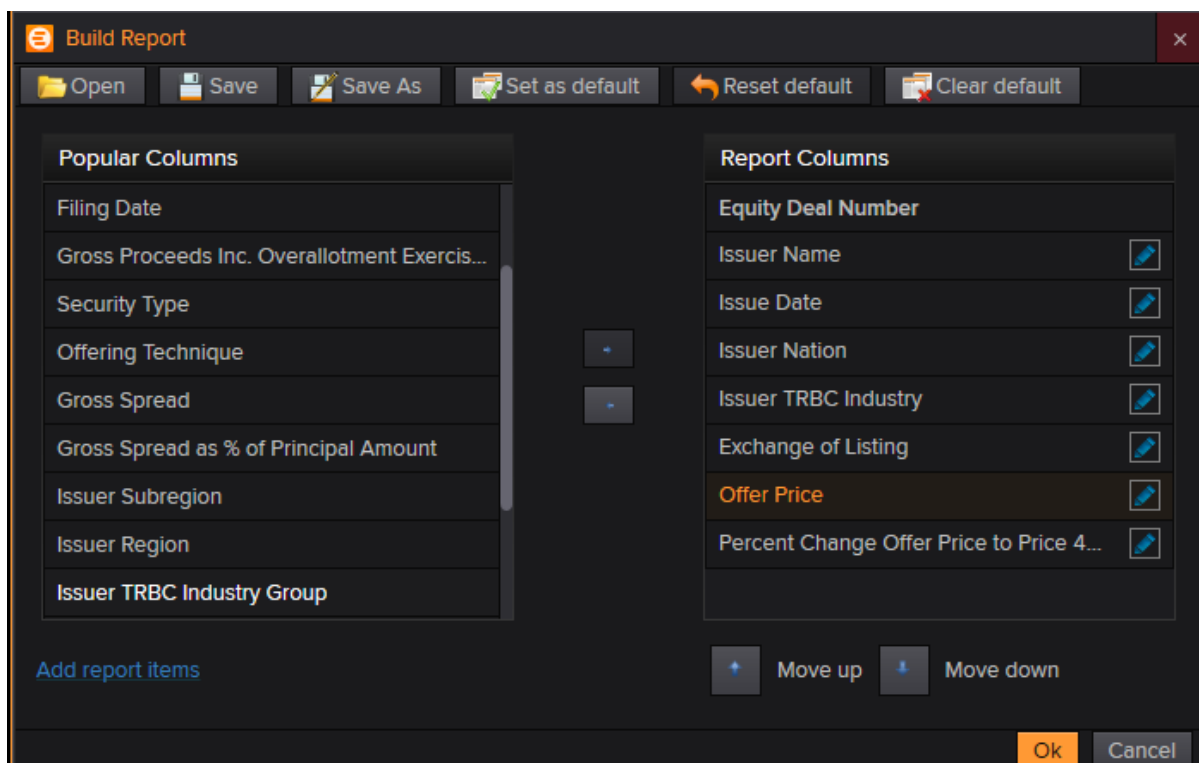
Picture 7: Finished selection

TIP: Under 'Add report items' you can add even more useful variables like for instance 'Price 4 Weeks after Offer'. Select whatever you think is useful.

The report is now ready to be exported to Excel. To do so we click in the 'Insert' button.

2.5   RIC

The Eikon plugin uses a function to download data into Excel. This formula is ususally generated with the formula builder. But Excel also gives us the possibility to write functions directly into cells. Next to the usual functions that are available on Excel, Thomson Reuters added some Eikon specific functions.

=RIC()

This function allows us to look up the **Reuters Identification Code** (RIC), which can then be used to reference to in the formula builder. After Entering =RIC(in the cell, an Eikon designed window will pop up, which allows us to search for the instrument we are looking for.
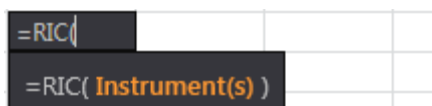
After selecting the right instrument, hit enter to insert the RIC in the cell.

3.   Eikon Apps

3.1   Screener

Apart from the Excel plug-in, Eikon also has some great apps that can be useful. One of them is the 'Screener'. This app is used **to select and filter equities** and thereby creating a list that can be used in the formula builder. To advantage to the searching system in the formula builder is that the screener tool has a higher limit. Also, the screener offers better filters to filter out relevant equities.

To open the screener, we first open the main program of Eikon, and then search for 'Screener' in the search bar on the top. The drop-down menu will allow us to open several apps, and we select the top one to open the app.

In the menu on the left-hand side we can see the universe we are in and the filters to the universe. One important aspect is to see that the current universe only contains **active, public** and **primary** equities.
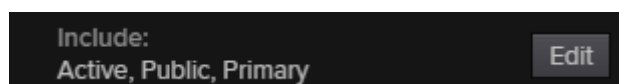

Picture 8: Include in universe

Depending on your interest, you might have to change this as this might lead to biases. For instance, the fact that it only includes equities that are still active might lead to a **survivorship bias.**

The edit button allows us to change the universe and also exclude certain types of equities. The next step is to filter out specific equity types with for instance one specific industry or one specific country. This process is straight forward and works the same as always in Eikon.

For my selection in this example I searched for **active** and **inactive equities** with their **headquarter in Sweden** which have **a revenue bigger than SEK500,000,000.00 per year**. As

you can see in picture 13, Eikon also gives an indication of how many equities fulfill my requirements in a nice graph.
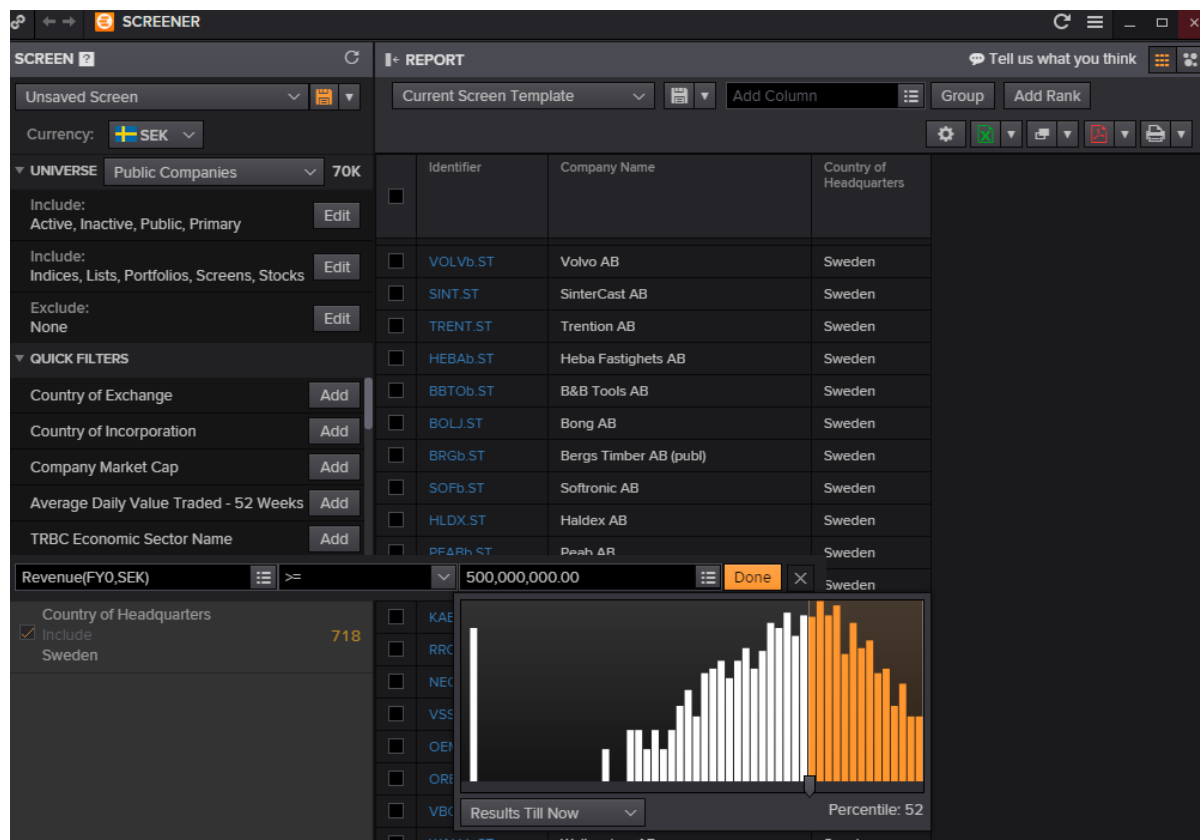
Picture 9: Screener Selection

Before downloading this into Excel it is possible to **add other columns**. To do so, search for the column you want to add in the search bar of the **report menu.** Once the selection is complete we can download it into Excel by clicking on the button. All 242 equities are now available with their RIC in Excel and can be used in the formula builder (for more on this, check out section 2.4 'Operation with lists').

The screener app has some other great features than just exporting lists. For instance, we can get a scatter plot of two various variables of our selection. What this means is that we can show the mapping of two variables directly in a graph.

To activate this option, we select ´Scatter plot view´ in the top right corner. We can now select a variable for the x-axis and a variable for the y-axis. For my x-axis I chose **Revenue** and for my y-axis I selected **CO2 Equivalents Emission Total.** This will give us a nice scatter plot which can be used to find outliners or trends in an equity selection.

TIP: *Save your screen so you can use it another time and continue working on it.*

3.1.1   S&P 500

In order to get a list of all the equities included in stock lists like the S&P 500, you have to change the universe to only include equities of this list.

When you edit the universe, click on 'Choose Inclusion' and enter your list in the list search bar. There you select you list, in this case "S&P 500". This will return all 505 companies currently listed in the S&P 500.
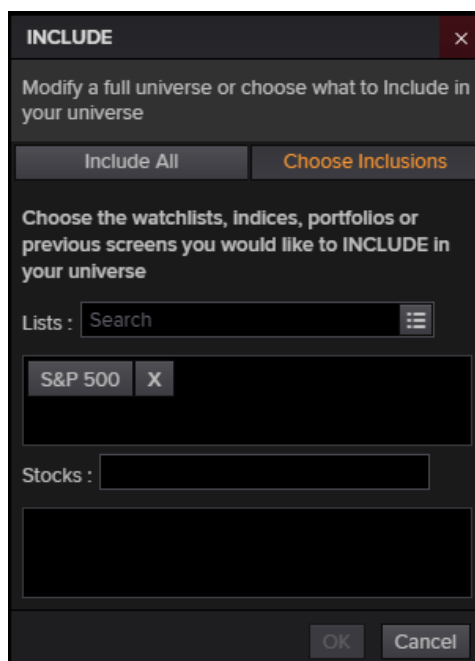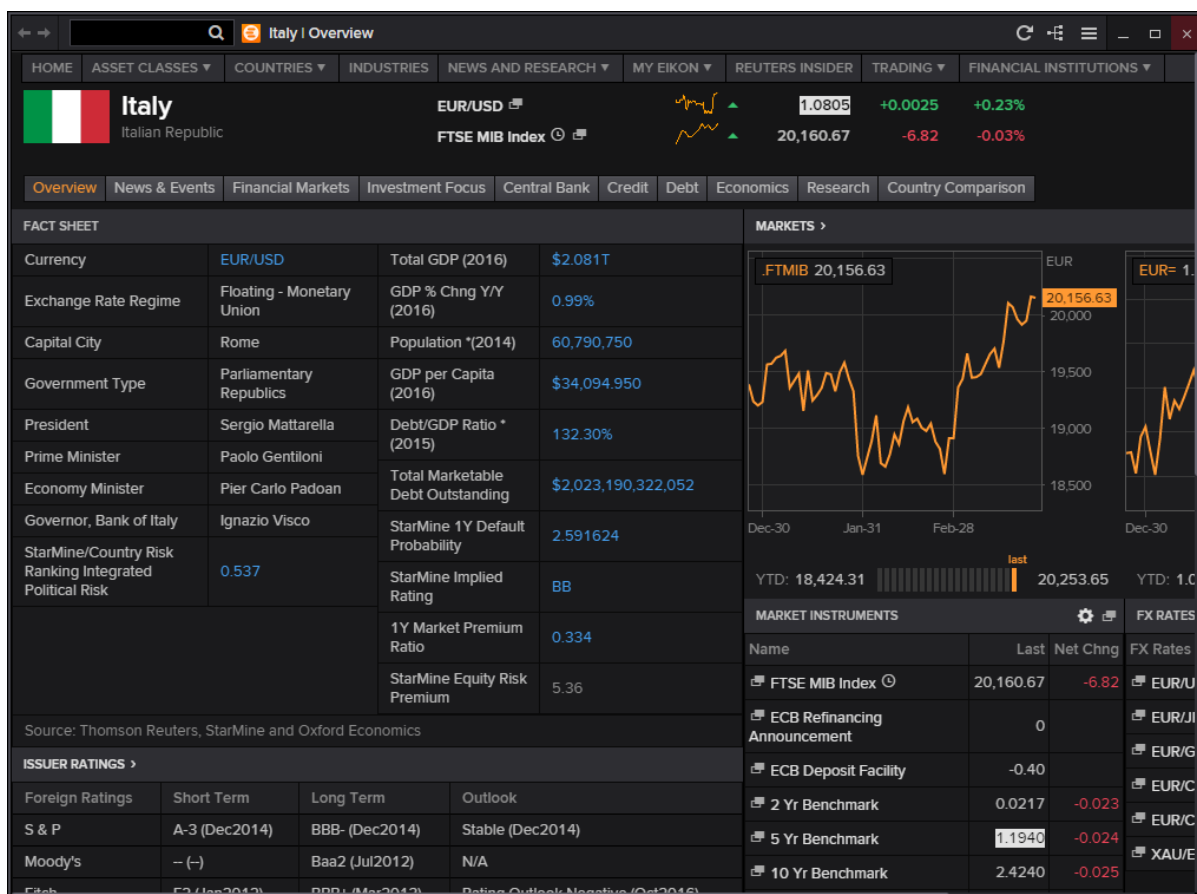

Picture 10: Alter the universe

3.2   Search Bar

Once Eikon is open you can search for any term in the search bar that appears in the top left corner. This option is less used to retrieve data but more to just ´look a bit around´. Not only equities can be found, but also fixed income, industries or countries.

Picture 11: Italy´s country overview

Even though it is not very handy to retrieve data, it is still possible sometimes to download whole excel sheets or graphs. These can be simply opened in Excel.

3.3 Portfolio and Lists

Another handy app is the portfolio and lists app. It was already briefly mentioned in the section 2.5 ´Operating with lists´. You can open this app by searching in the search bar. To create a new portfolio, click on Create. Enter a name and a short name for your list and select ´Create´.

You can now add your equities manually by RIC, Name or any other way to find the equity. But the easiest way to add multiple equities at a time is to filter them with the ´Screener´ app and then send them to my lists.

If you have selected all your equities in the screener you can select the small drop down menu on the right top corner.
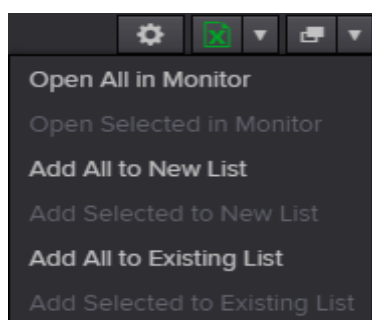
There will be an option ´Add All to Existing List´ and you can select your freshly created list.

If you now want to use this list in Excel, you can find a button ☰ Lists next to the formula builder app. Clicking on it will open the Portfolio and List manager and will allow you to select your list. Click on ´insert´ and your list will be downloaded in Excel with the corresponding RIC and Name of the equity.

4. Appendix A: Specific Solutions

4.1 Different reporting dates

Sometimes it happens that we want to compare a variable over several periods of two different equities. The problem is that not every company reports this variable at the same time. So when we create a formula that reports us the yearly value over 4 years, and add `Date´ to show us which value belongs to which year, we get something like this:

Updated at 13:21:45		CO2 Equivalents Emission Total	CO2 Equivalents Emission Total	
		AAPL.O	FB.O	
26-9-2015		404468	NULL	
27-9-2014		363397	NULL	
28-9-2013		334186	NULL	
29-9-2012		271745	NULL	
31-12-2015	NULL		454300	
31-12-2014	NULL		443520	
31-12-2013	NULL		370980	
31-12-2012	NULL		311040	

Picture 12: Different reporting dates

Even though we just want to compare the years, the system cannot match the two dates because they are not the same.

To solve this we go into the ´Layout´ menu in the formula builder. Instead of having ´Date´ in our **Row** selection, we now choose the item ´Financial Period Absolute´. This will solve the problem as this will only report the financial period and not a specific date.

Picture 13: Periods in financial periods

4.2   Working with CDS instruments

For some reason, the formula builder does not allow us to work with more than 25 Credit Default Swaps at once. When you search for instruments in the formula builder it is possible to send them. But once you have selected your data items and click on insert, nothing happens.

To bypass this problem, we want to download the list of CDS into Excel first, and then reference to the cells in the formula builder.

Step 1: Once you have applied all your search criteria for your CDS, click on search to see all the results. In my case, I selected CDS of all German banks.
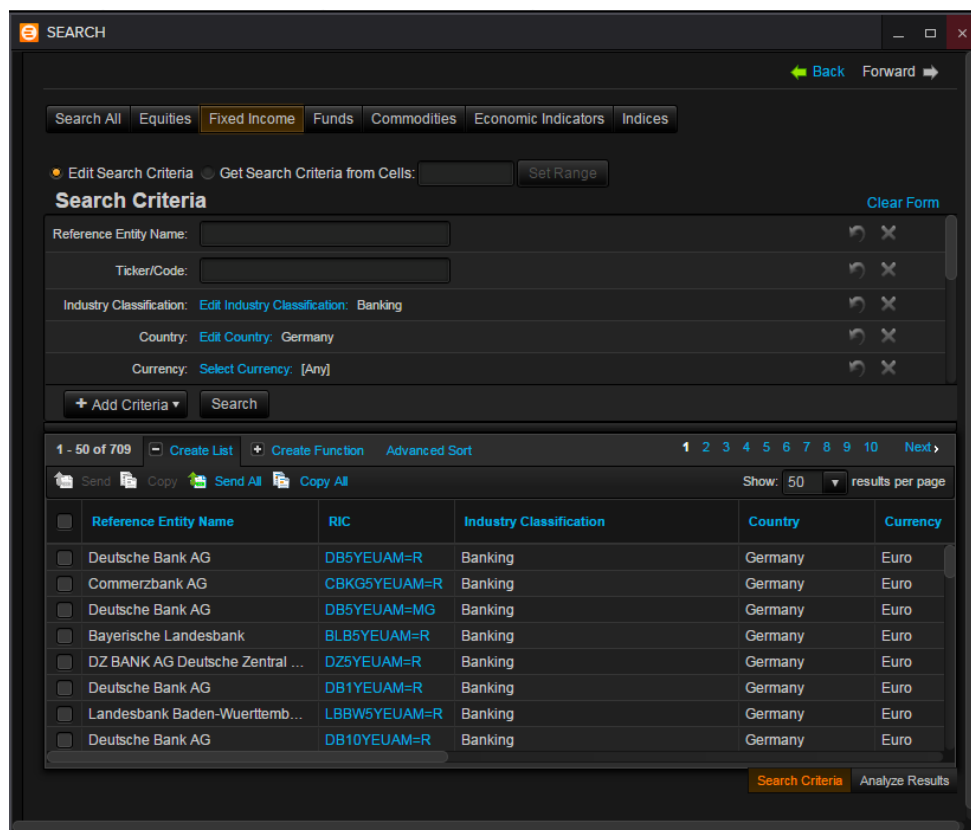
Picture 14: CDS selection

Step 2: Click on 'Copy All' to save them in your memory (as in Ctrl + C). Open a new Excel file and paste them with Ctrl + V.

Step 3: Open the formula builder and select the RICs as instruments for your new query.

Data items like 'mid spread' should be no problem to retrieve now.

4.3 Date-specific equity returns

The formula builder allows us to download equity prices for a list of companies in no time. But it does not allow us to set a specific date for each equity. Fortunately, there is still a way to download the data relatively fast.

As an example, we look at an event study for the effect of software releases on phone sales.

The dataset consists of 3 companies:

- Apple/Google/Microsoft

And the corresponding release dates of new operating systems.[2]

- iOS Update: 21-03-2016
- Android Update: 06-06-2017
- Windows Phone Update: 20-10-2015

Suppose this study wants to examine whether the release of a new OS has a positive effect on the stock price of each company.

	A	B
1	Equity	Date
2	AAPL.O	21-3-2016
3	GOOGL.O	6-6-2017
4	MSFT.O	20-10-2015

Figure 1: Matrix 1

Column A contains the RICs of the equities and column B the corresponding dates. In column C we will put the equity price at time t.

Step 1: Create the initial function

Create a new formula in any cell blow the matrix (for instance A5). As an instrument, refer to cell A2 with the "reference a cell" tool.

Select the a data item that will return the equity price (TR.PriceClose). In "Parameters and Quick Functions " use "reference a cell" again to select the "As of" date to cell B2.

The function so far will be:

=TR(A2;"TR.PriceClose";"SDate=#1 CH=Fd RH=IN";B6;B2)

Step 2: Improve the layout

As a second step click on layout and remove **Field** from **Columns** and **Instruments** from **Rows.** This will make sure that only the actual value is downloaded into the sheet and no other information.

Also, set the destination cell to C2, as this is where we want the data to appear. Insert the function into excel now. The price for apple at time t will appear in C2.

Step 3: Apply for other equities

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[2] These dates are random

We could now redo this procedure for all the other equities. But as we used relative inputs for the function, we can just drag the function with excel and make it copy the function into other cells. Before we do that, we need to change our function a bit.

If we click on cell A5 we see that our function currently is

=TR(A2;"TR.PriceClose";"SDate=#1 CH=Fd RH=IN";C2;B2)

Once we will drag this function to copy it, the inputs with $ will not change. But as we want them to change, we need to remove all the dollar signs. (Use shortcut F4)

=TR(A2;"TR.PriceClose";"SDate=#1 CH=Fd RH=IN";C2;B2)

Now we can drag the function downwards and it will copy the function.

	A	B	C
1	Equity	Date	Price at t
2	AAPL.O	21-3-2016	105.91
3	GOOGL.O	6-6-2017	996.68
4	MSFT.O	20-10-2015	47.77
5	Updated at 12:39:30		
6	Updated at 12:39:42		
7	Updated at 12:39:42		
8			
9			
10			
11			

Figure 2: Finished data set

4.4   The Formula – explained

The formula builder creates a formula which is responsible for downloading data. This section will describe how the formula is constructed and how it can be manipulated.

=TR((Instrument),(Data Item),(Column and Row settings),(Destination Cell))

The Thomson Reuters function is initiated with =TR has 4 required arguments:

Instrument

RIC/ISIN in *string*. Use (;) to split several items   ("APPL.O")

Data Item

Data Item code in *string*. Use (;) to split several items　　　　　　　("TR.PriceClose")

Column and Row settings

Layout codes in *string*. CH defines the columns, RH defines the Rows.　　　("CH=FD RH=IN")

Destination Cell

Destination in *Cell argument*. The cell refers to the top right cell of the data matrix　　　(B2)

Note: All arguments of course can refer to a cell. It is therefore possible to relativize all the arguments.

There are some extra arguments that can be added to specify more of the dataset:

Date specifications:

Date specifications are mostly added within the **Column and Row argument**. As single date is added as by adding "SDate=YYYY-MM-DD" in front of the layout codes. The arguments do not need to be split.

If you want to specify a time range you need to include an end date with "EDate=YYYY-MM-DD" as well as a frequency definition "Frq=D". The complete argument should look as follow:

"SDate=2017-11-30 EDate=2017-11-15 Frq=D CH=Fd RH=IN"

To relativize the start and end date, we cannot simply change the dates to cells. The way to do is replace the dates with "#1" and "#2", respectively, and then add an additional cell argument to the end of the formula. Your complete formula should then look something like this:

=TR("AAPL.O","TR.PriceClose","SDate=#1 Frq=D EDate=#2 CH=Fd RH=IN",B8,A7,A8)