

The Financial Mathematics and Computation Cluster (FMC) was established in 2009. FMC is funded by Science Foundation Ireland and Industry. Further details about FMC are in the appendix and <http://www.fmc-cluster.org/>



Note: Databases are located in standalone computers in the Financial Data room.

FactSet Quick Start Guide

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FactSet Quick Start Guide

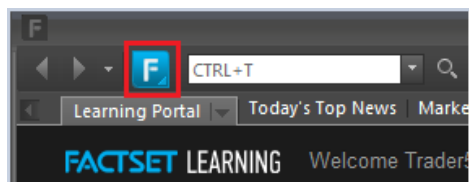
What is FactSet?

FactSet is a research platform that consolidates all the analytics and data professionals need to monitor global markets, public and private companies, and equity and fixed income portfolios in a single, intuitive interface.

Getting Started

FactSet's workspace is customizable and flexible. You can save your workspaces online anytime and share with your colleagues. FactSet is also easy to navigate – you can navigate between your tabs with your mouse or via keyboard shortcuts.

FactSet Insert Menu

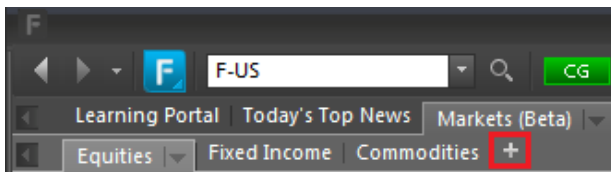


While you are using FactSet, the blue F button is your best friend. From the menu, you can launch and manage your workspace, components, tabs and sub-tabs. Here is a summary of some basic functions of each main category:

- **Learning Portal**
Access Courses designed to develop your skills and knowledge of Factset.
- **Today's Top News**
Find market news, company news, investment researches and content online.
- **Markets**
Access world market data, including indices, gainers & losers, volume, economic reports, etc., and compare market performances and countries data.
- **Quotes**
Monitor market data (with Market Watch), and access equity, option and futures quotes and historic prices.
- **Charting**
Chart market data and economic series
- **Economics**
View calendar of economic data releases, access Economic information by country/region and access economic data comparisons and estimates.

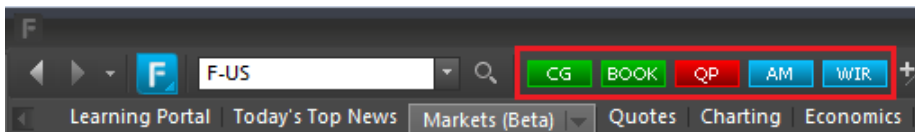
- **Industry**
View overviews, financials and reports on sectors, industries and regions.
- **Company/Security**
Access all the available information, estimates and valuations of public and private companies, private equity and venture capital funds
- **Filings**
Search for corporate filings and transcripts including all regulatory filings
- **Screening**
Screen for equities and ideas (potential investment opportunities, find potential buyers, track trends, and identify precedent transactions)
- **Portfolio**
Create, track and evaluate portfolios and/or custom composites in real time.
- **Ownership**
Research ownership details, recent activity and key ownership statistics about a company, officers and directors affiliated with public and private companies and private equity firms

Inserting Components in Your Workspace



- 1) Click the plus button next to the tab where you want to create a new tab
- 2) Then, launch a desired component from the FactSet Insert menu.

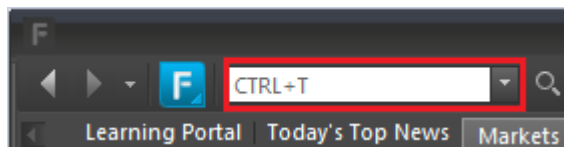
If you're using a predefined workspace, you can also click a shortcut icon in the toolbar to launch the corresponding component (please refer to the following screenshot).



- **CG** – Company Guide
- **BOOK** – BookBuilder
- **QP** – Quick Portfolio
- **AM** – Alert Manager
- **WIR** – Wireless Configuration

If you have already searched and selected a ticker using the FactSet search box, you will be able to access the specific information of the ticker as you click these icons. Of course, you don't need to do so. You can always open the tool first and then type in the ticker(s).

Searching with FactSet



Enter keywords into the FactSet Search box. As you type, the FactSearch drop-down menu will populate with results related to the search keywords. The drop-down menu is separated into the following sections:

- **Entities** - Includes security types such as equities, indices, people, mutual funds, and private companies
- **Components** - Includes all the components found in the FactSet Insert menu
- **Series & Reports** - Includes economic charts and series that are available in Economic Analysis Charting
- **Search Online Assistant** - Opens an Online Assistant search page with a list of help pages that include your keyword

Some Useful Keyboard Shortcuts

- To activate the FactSet Insert menu, press **ALT + F**.
- To display a component outside FactSet, press **ALT + O**.
- To activate FactSearch or the Master Identifier box, press **CTRL + T**.
- To navigate to the lowest tab layer, press **ALT + [1-9]**.
- To toggle up/down through the tab layers, press **CTRL + Up Arrow** or **Down Arrow**.
- To move the cursor left in a tab layer, press **CTRL + Left Arrow** or **Page Up**.
- To move the cursor right in a tab layer, press **CTRL + Right Arrow** or **Page Down**.

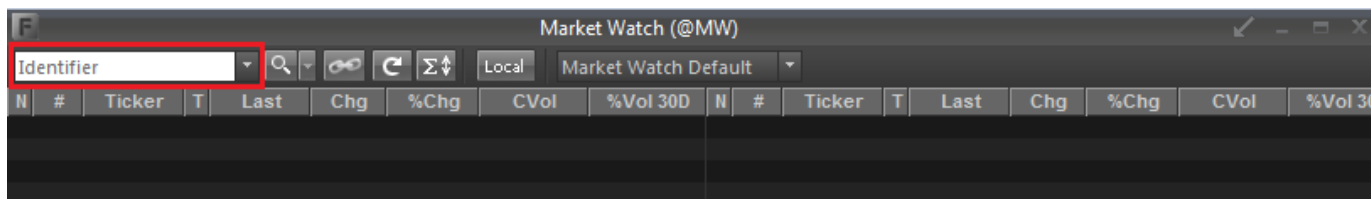
Market Watch

Market Watch is one of the most used components in FactSet. It allows you to create a list of real-time quotes on equities, bonds, commodities, currencies and indices.

To open it, follow: **FactSet insert menu > Quotes / Prices > Market Watch**

For illustration purposes, we will use **IBM**, **BMO bond (1.95% 30-JAN-2017)** and **S&P 500 index** in the following demonstrations.

- 1) Type and select the in the identifiers in the search box.



As we type, a drop down menu will appear, and we will select the ticker we are looking for. If you don't know the ticker(s), just simply type in the name of the ticker, and you will be able to screen out the results.

| Market Watch (@MW) | |
|----------------------|--|
| AL BUSINESS MACHINES | |
| Equities | |
| IBM-USA | International Business Machines Corporation |
| Bonds | |
| 459200GJ | International Business Machines Corporation 5.7% 14-SEP-2017 |
| 459200HU | International Business Machines Corporation 3.625% 12-FEB-2024 |
| 459200GX | International Business Machines Corporation 1.95% 22-JUL-2016 |
| 459200HQ | International Business Machines Corporation 1.875% 06-NOV-2020 |
| 459200GM | International Business Machines Corporation 7.625% 15-OCT-2018 |
| 459200HP | International Business Machines Corporation 3.375% 01-AUG-2023 |
| 459200HZ | International Business Machines Corporation 1.125% 06-FEB-2018 |
| 459200HM | International Business Machines Corporation 1.625% 15-MAY-2020 |
| 459200HS | International Business Machines Corporation 2.75% 21-DEC-2020 |
| 459200HH | International Business Machines Corporation 1.375% 19-NOV-2019 |

| Market Watch (@MW) | |
|--------------------|---|
| BANK OF MONTREAL | |
| Equities | |
| BMO-TSE | Bank of Montreal |
| Bonds | |
| USC3331CDA92 | Bank of Montreal 1.95% 30-JAN-2017 (Reg S) |
| 063679ZT | Bank of Montreal 1.95% 30-JAN-2017 (144A) |
| XS1172094747 | Bank of Montreal 0.25% 22-JAN-2020 (Reg S) |
| XS1270460691 | Bank of Montreal 0.375% 05-AUG-2020 (Reg S) |
| 0636795H | Bank of Montreal 2.24% 11-DEC-2017 |
| 06366QW8 | Bank of Montreal 2.5% 11-JAN-2017 |
| USC0623PAP39 | Bank of Montreal 2.625% 25-JAN-2016 (Reg S) |
| 063679JJ | Bank of Montreal 2.625% 25-JAN-2016 (144A) |
| 06367VHK | Bank of Montreal FRN 24-SEP-2015 |
| 06366RRC | Bank of Montreal FRN 24-SEP-2015 |

| Market Watch (@MW) | |
|-----------------------|---|
| S&P 500 | |
| Indices | |
| SPL-CBO | S&P 500 (500-995) |
| SP50-USA | S&P 500 |
| SPX-SPX | S&P 500 |
| JP1-CME | S&P Japan 500 |
| BSE500-IND | India S&P BSE 500 |
| SP500G-CME | S&P 500 Growth |
| SPW-CME | S&P 500 Equal Weighted Index |
| SPXPV-USA | S&P 500 Citigroup Pure Value |
| SP500V-CME | S&P 500 Value |
| SPXPG-USA | S&P 500 Citigroup Pure Growth |
| Mutual Funds | |
| OUTRX-USA | DWS Market Trust Enhanced S&P 500 Index Fund R |
| XBEOX-USA | ENHANCED S&P 500 COVERED CALL FUND INC. |
| DSPNX-USA | Delaware S&P 500 Index Fd Instl Class |
| GRMCX-USA | Nationwide S&P 500 Index Fund Class C |
| BXMX-USA | Nuveen S&P 500 Buy-Write Income Fund of Benef Interest |
| SPIIX-USA | SEI Index Fd, S&P 500 Index Fund Class I |
| KSABX-USA | Scudder Invs Tr S&P 500 Stk B |
| DSPCX-USA | Delaware S&P 500 Index Fd Consultant CI |
| SFXIX-USA | State Farm S&P 500 Index Fund Institutional Shares |
| Exchange Traded Funds | |
| 500-PAR | Amundi ETF S&P 500 UCITS ETF EUR |
| 500-LON | Amundi ETF S&P 500 UCITS ETF EUR |
| 500-TRQX | Amundi ETF S&P 500 UCITS ETF EUR |
| 500U-PAR | Amundi ETF S&P 500 UCITS ETF USD |
| 500H-PAR | Amundi ETF S&P 500 (EUR) Hedged Daily UCITS ETF FCP |
| Futures | |
| ES00-USA | eMini S&P 500 (CME) Continuous |
| SP00-USA | S&P 500 (CME) Continuous |
| ISP00-BMF | S&P 500 (BMF) Continuous |
| Bonds | |
| 06741L60 | iPath S&P 500 Dynamic VIX ETN 0% 18-AUG-2021 |
| 06739F13 | iPath CBOE S&P 500 BuyWrite Index ETN 0% 28-MAY-2037 |
| 06740L59 | iPath Inverse S&P 500 VIX Short Term Futures ETN 0% 17-JUL-2020 |

2) After you are done, we will be able to monitor the list.

Market Watch (@MW)

Identifier Local Market Watch Default

| N | # | Ticker | T | Last | Chg | %Chg | CVol | %Vol 30D | N | # | Ticker | T | Last | Chg | %Chg | CVol |
|---|---|-----------|---|---------|-------|--------|-----------|----------|---|---|--------|---|------|-----|------|------|
| N | 6 | BMO,AP-O | E | 101.26 | -0.05 | -0.05% | 0 | -- | | | | | | | | |
| N | 4 | IBM | D | 144.24 | -2.24 | -1.53% | 2,034,262 | 47.15% | | | | | | | | |
| | | SP500-SPX | | 1916.02 | 0.00 | 0.00% | 0 | -- | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

3) If you would like to monitor some other fields, right click on the market watch window > select **Options** > and you can browse through available columns and add new column.

Options...

Columns | Groupings | Display Settings

Available Columns

- All
- Prices
- Volume
- Price Changes
- Portfolio/Benchmark
- Valuation
- Date & Time
- News
- Quantity
- Identifier
- London
- Mutual Fund
- Rates
- CDS
- FX
- Indicators
- Misc
- Custom

Add >>

<< Remove

New...

Edit...

Delete

Visible Columns

Column Header

News Indicator

#

Ticker

Tick

Last

Chg

%Chg

CVol

%Vol 30D

Format

Column Header:

News Indicator

Grouping Statistic:

None

Sum

Average

Weighted Average

Median

Harmonic Weighted Avg

☐ Apply Statistic to Total Row

Up/Down Color Based on...

%Chg

Edit

Apply to All Columns

Weighting Method Based on ...

Mkt Cap

Edit

Layout

of Column

Sets:

Pos/Neg Sorting

Market Watch Defau

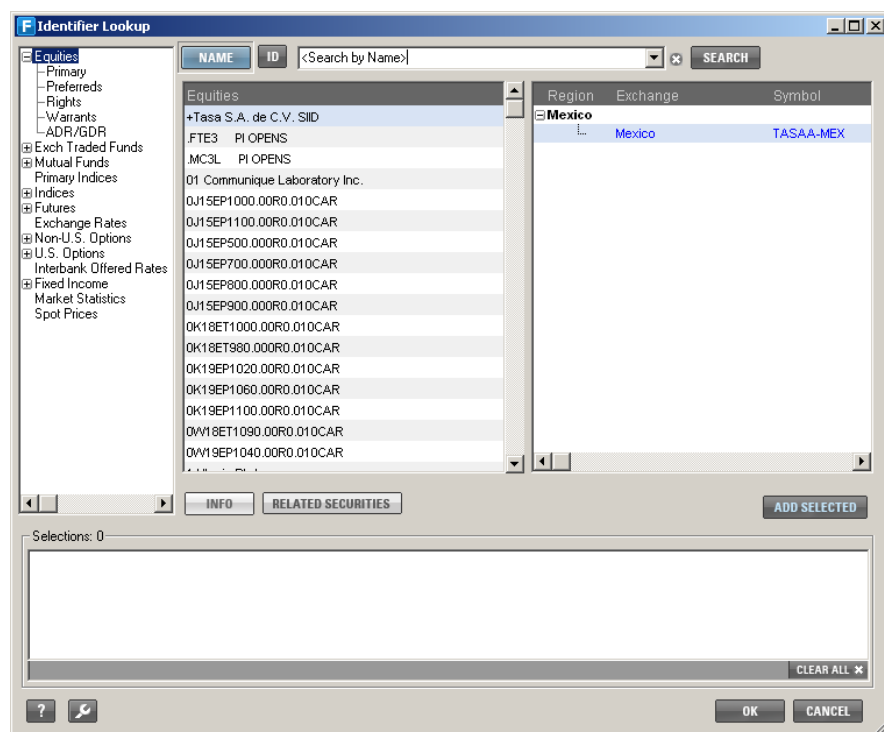
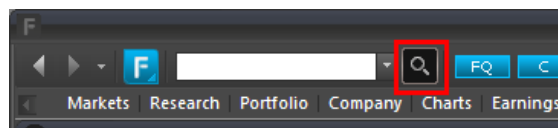
Save As...

Delete

OK Cancel Apply

Identifier Lookup

If you are uncertain of the identifier of any securities, click the magnifying glass button and select **Identifier Lookup**, and this will bring out the following window.








You can search by name and narrow down the results with the categories on the left and the region on the right, and after you finish selecting the name of the security you are looking for, you can narrow down even further by choosing the region and exchange. After that, you can double click the identifier in the right most box or click Add Selected to add the identifier into your selection box. When you are done, click OK and your selections should be added to the tools you have opened (ie. Chart, Market Watch, etc.).

Charting



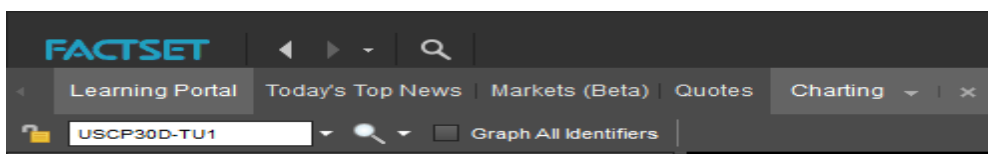
To chart a security, go to **FactSet Menu > Charting > Chart**. If you already have the identifier in the search box at the top, or you have selected an identifier from the Identifier Lookup, FactSet will automatically chart the symbol for you.

- click  to chart multiple indicators.
- click  to toggle crosshair.
- click  to draw a horizontal line on the chart.
- click  to draw a trend line between two points.
- click  to draw Fibonacci retracement lines.

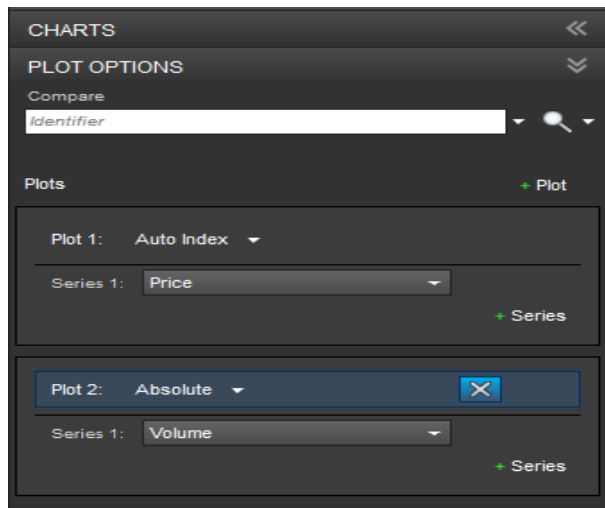
To delete any lines drawn, right click the chart and go to **Delete**. If you would like to change the charting details, right click on the chart and go to **Options**.

Charting Specific series

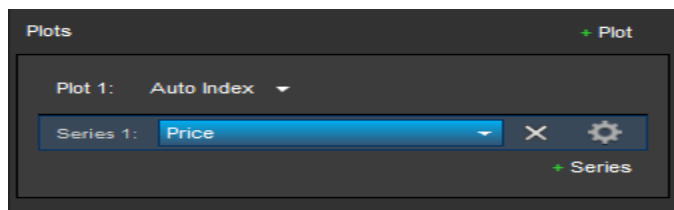
1. in this example we will use the 30 Day US Commercial Paper (USCP30D-TU1)



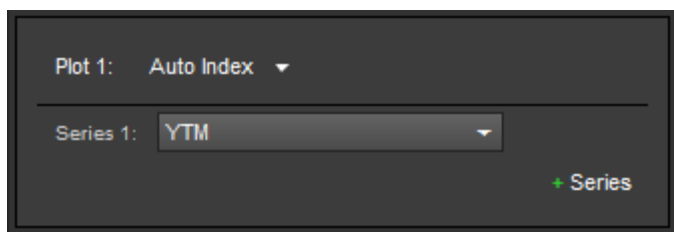
- Under the “Charts” box on the left hand side click the Blue X (shown below) to remove Plot 2



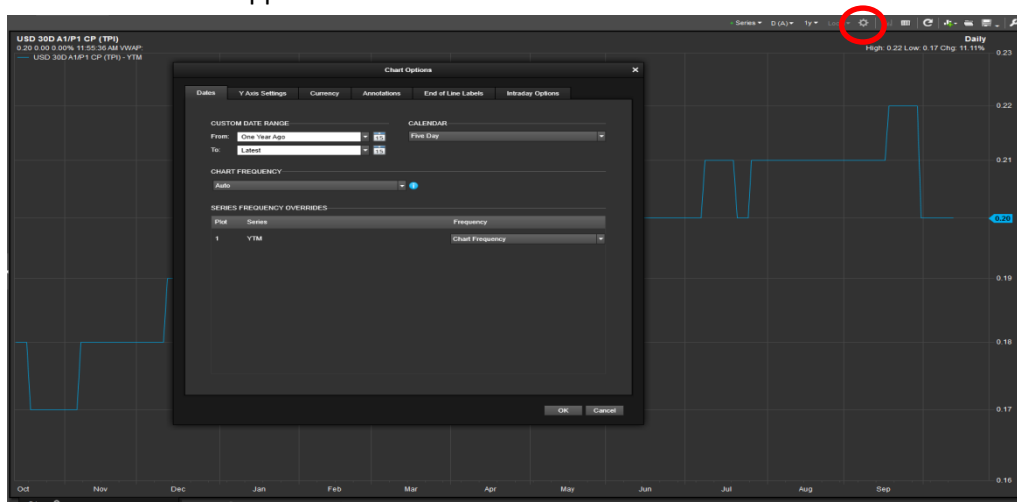
- Under Plot 1, series 1, click the price button to change the graph



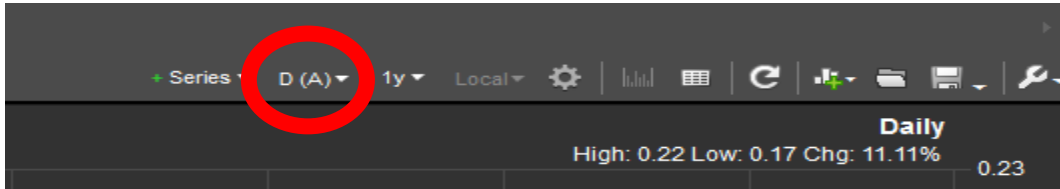
- Select “Fixed Income” → “Yields” → “YTM” to graph the Yield to Maturity of the 30 Day US Commercial Paper



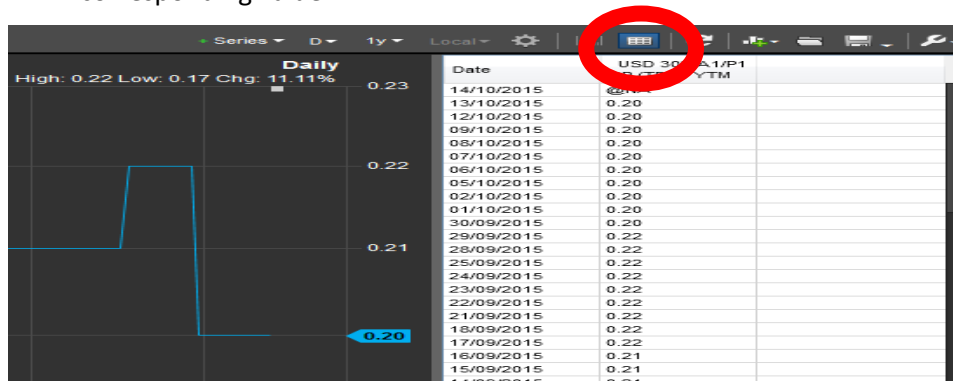
- To change the date range, click the gear button on the top right side and a pop up “Chart Options” should appear



- Choose the desired date range by clicking the calendar button to the right of the “From” and “To” label. Hit Enter.
- Click the D(A) button and change it from “Auto” to “Daily”



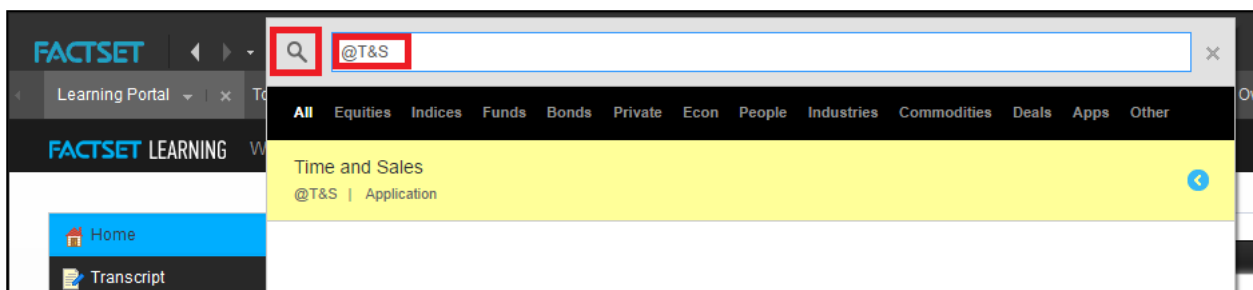
- Click the “Show Report” Button to show the table of values and find the desired date and the corresponding value.



Retrieving Time & Sales data

Retrieving the Data

To calculate a market Volume-Weighted-Average-Price (VWAP) for a certain security using FactSet, click the search icon on the top left of the screen (or press CTRL+SHIFT+F) and type: @T&S



A new “Time and Sales (@T&S)” window will pop up. Within the new window fill out the Date/Time Range and filters side bar to your desired settings. For daily values, remember to set the time from 9:30:00 to 16:00:00 and the beginning and end date to the same date. In this case we will use September 1, 2015 as our date and will uncheck all filters. Next, within the search bar at the top type your security ticker, we will use General Electric (GE-USA) as an example.

After entering your security, press the ENTER key. In our case, the security name will be “GE”. If followed correctly, your window will look similar to the one below. If you are unsure about FactSet naming conventions, you can type the name of your security and FactSet should automatically populate a list with the possible results. The ending result will look like the screenshot below.

Time and Sales (@T&S)

GE

General Electric Company

USD

NYSE

Last: 24.00, Chg: 0.00, %Chg: 0.00%, Bid: 0.00, Ask: 0.00, Vol: 0, CVol: 0, ACVol: 0, Turnover: 0, AVWA: N/A, VWAP: 0.00, Open: 0.00, PrClose: 24.00

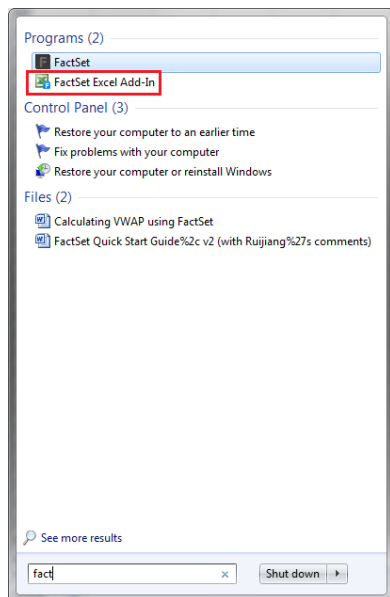
| Time | Price | Vol | Exch | Bid | BSiz | ASiz | Ask | CVol |
|-----------|--------|--------|------------|--------|------|------|--------|--------|
| 16:00:00* | 23.890 | 160 | NASDAQ | 23.890 | 517 | 1,80 | 23.900 | |
| 16:00:00 | 23.903 | 320 | ARCA | 23.890 | 517 | 1,80 | 23.900 | |
| 15:59:59 | 23.903 | 320 | FINRA ADF | 23.890 | 517 | 1,53 | 23.900 | 61,142 |
| 15:59:59 | 23.890 | 147 | ARCA | 23.890 | 252 | 1,41 | 23.900 | 61,142 |
| 15:59:59 | 23.890 | 12,700 | NYSE | 23.890 | 438 | 1,41 | 23.900 | 61,141 |
| 15:59:59 | 23.890 | 2,200 | NYSE | 23.890 | 438 | 1,41 | 23.900 | 61,129 |
| 15:59:59 | 23.890 | 73 | ARCA | 23.890 | 514 | 1,28 | 23.900 | 61,127 |
| 15:59:59 | 23.890 | 200 | NYSE | 23.890 | 437 | 1,32 | 23.900 | 61,127 |
| 15:59:59 | 23.890 | 4,400 | NYSE | 23.890 | 437 | 1,32 | 23.900 | 61,126 |
| 15:59:59 | 23.890 | 4,400 | NYSE | 23.890 | 437 | 1,32 | 23.900 | 61,122 |
| 15:59:59 | 23.890 | 7,700 | NYSE | 23.890 | 437 | 1,32 | 23.900 | 61,118 |
| 15:59:59 | 23.890 | 200 | BATS | 23.890 | 437 | 1,33 | 23.900 | 61,110 |
| 15:59:59 | 23.890 | 1,100 | NYSE | 23.890 | 437 | 1,33 | 23.900 | 61,110 |
| 15:59:59 | 23.890 | 900 | BATS | 23.890 | 437 | 1,33 | 23.900 | 61,109 |
| 15:59:59 | 23.890 | 100 | BATS | 23.890 | 437 | 1,33 | 23.900 | 61,108 |
| 15:59:59 | 23.890 | 900 | BATS | 23.890 | 437 | 1,33 | 23.900 | 61,108 |
| 15:59:59 | 23.890 | 2,200 | NYSE | 23.890 | 437 | 1,33 | 23.900 | 61,107 |
| 15:59:59 | 23.890 | 1,000 | NASDAQ OMX | 23.890 | 437 | 1,33 | 23.900 | 61,104 |
| 15:59:59 | 23.890 | 100 | NASDAQ OMX | 23.890 | 437 | 1,33 | 23.900 | 61,103 |
| 15:59:59 | 23.890 | 200 | BATS Y | 23.890 | 437 | 1,33 | 23.900 | 61,103 |
| 15:59:59 | 23.890 | 55 | NASDAQ OMX | 23.890 | 437 | 1,33 | 23.900 | 61,103 |
| 15:59:59 | 23.890 | 100 | NASDAQ OMX | 23.890 | 437 | 1,33 | 23.900 | 61,103 |
| 15:59:59 | 23.890 | 300 | NASDAQ OMX | 23.890 | 437 | 1,33 | 23.900 | 61,103 |
| 15:59:59 | 23.900 | 100 | NASDAQ OMX | 23.890 | 439 | 1,32 | 23.900 | 61,103 |
| 15:59:59 | 23.900 | 100 | NASDAQ OMX | 23.890 | 439 | 1,32 | 23.900 | 61,103 |

The next step will be to export the data to Excel to perform your calculations. To do this right click within the table and press “Download Report...” A window will pop up asking where you wish to save the document, you can download the document anywhere but it should be saved as a “.csv” file to ensure proper number formatting. The data can be copied or saved elsewhere after it has been downloaded. Determine what data will be used in your calculations and copy this into a new Excel file. Downloaded data will look like the screenshot below.

| | A | B | C | D | E | F | G | H | I | J | K | L |
|----|---|---------|---------|-----------|-------|-------|---------|----------|----------|----------|-------------|-------|
| 1 | GE | | | | | | | | | | | |
| 2 | General Electric Company | | | | | | | | USD | | | NYSE |
| 3 | Last | | Chg | %Chg | Bid | Ask | Vol | CVol | ACVol | Turnover | AVWAP | VWAP |
| 4 | 25.11 | | 0.02 | 0.08% | 25.09 | 25.14 | 6178571 | 43689503 | | 1088316 | N/A | 24.94 |
| 5 | | | | | | | | | | | | |
| 6 | From: 01/09/2015 09:30:00 - To: 03/09/2015 04:00:00 | | | | | | | | | | | |
| 7 | | | | | | | | | | | | |
| 8 | Time | Price | Vol | Exch | Bid | BSize | ASize | Ask | CVol | VWAP | Status | |
| 9 | 16:00:27* | 24.57 | 2867330 | NYSE | 24.57 | 1012 | 1550 | 24.58 | 49124615 | 24.2651 | CLT, BK | |
| 10 | 16:00:00 | 24.58 | 1900 | NASDAQ | 24.57 | 1012 | 1550 | 24.58 | | | CLS | |
| 11 | 16:00:00 | 24.58 | 1900 | ARCA | 24.57 | 1041 | 1550 | 24.58 | | | CLS | |
| 12 | 15:59:59 | 24.58 | 1900 | NASDAQ | 24.57 | 1058 | 1550 | 24.58 | 46247585 | 24.2457 | ISO, x | |
| 13 | 15:59:59 | 24.58 | 117 | EDGX | 24.57 | 1048 | 1384 | 24.58 | 46245685 | 24.2456 | ISO, x | |
| 14 | 15:59:59 | 24.58 | 1200 | NYSE | 24.57 | 827 | 1384 | 24.58 | 46245568 | 24.2456 | ISO, x | |
| 15 | 15:59:59 | 24.5762 | 200 | FINRA ADI | 24.57 | 827 | 1384 | 24.58 | 46244368 | 24.2456 | | |
| 16 | 15:59:59 | 24.58 | 200 | NASDAQ | 24.57 | 827 | 1384 | 24.58 | 46244168 | 24.2456 | ISO, x | |
| 17 | 15:59:59 | 24.58 | 420 | ARCA | 24.57 | 827 | 1384 | 24.58 | 46243968 | 24.2456 | ISO, x | |
| 18 | 15:59:59 | 24.58 | 200 | BATS | 24.57 | 827 | 1384 | 24.58 | 46243548 | 24.2456 | ISO, x | |
| 19 | 15:59:59 | 24.58 | 7200 | NYSE | 24.57 | 827 | 1384 | 24.58 | 46243348 | 24.2456 | ISO, x | |
| 20 | 15:59:59 | 24.58 | 200 | NASDAQ | 24.57 | 827 | 1384 | 24.58 | 46236148 | 24.2456 | | |
| 21 | 15:59:59 | 24.58 | 1085 | NASDAQ | 24.57 | 827 | 1384 | 24.58 | 46235948 | 24.2456 | ISO, x | |
| 22 | 15:59:59 | 24.58 | 450 | FINRA ADI | 24.57 | 827 | 1384 | 24.58 | 46234863 | 24.2456 | | |
| 23 | 15:59:59 | 24.58 | 104 | NASDAQ | 24.57 | 827 | 1384 | 24.58 | 46234413 | 24.2456 | ISO, x | |
| 24 | 15:59:59 | 24.58 | 511 | NASDAQ | 24.57 | 827 | 1384 | 24.58 | 46234309 | 24.2456 | ISO, x | |
| 25 | 15:59:59 | 24.58 | 12 | NASDAQ | 24.57 | 827 | 1384 | 24.58 | 46233798 | | ISO, ODD, x | |
| 26 | 15:59:59 | 24.58 | 9 | NASDAQ | 24.57 | 827 | 1384 | 24.58 | 46233786 | | ISO, ODD, x | |
| 27 | 15:59:59 | 24.58 | 775 | NASDAQ | 24.57 | 827 | 1262 | 24.58 | 46233777 | 24.2456 | ISO, x | |
| 28 | 15:59:59 | 24.58 | 12 | NASDAQ | 24.57 | 827 | 1018 | 24.58 | 46233002 | | ISO, ODD, x | |

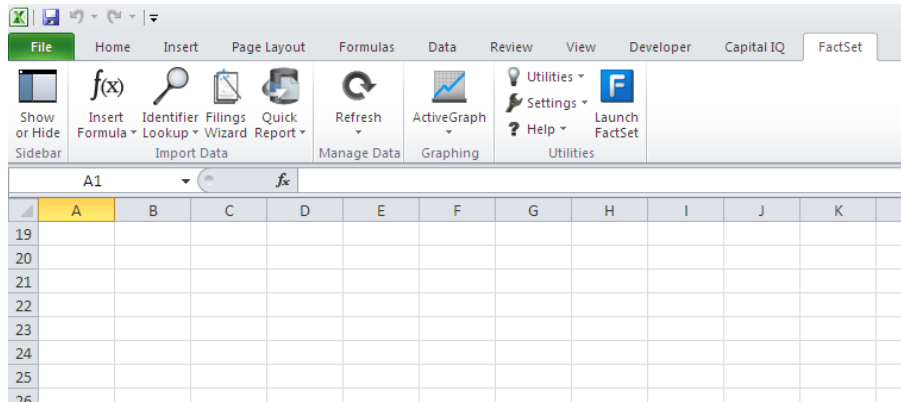
Excel Add-in

- 1) To launch the Factset add-in search “ Factset Excel” in the start menu and select the “FactSet Excel Add-In” shown below. This will have to be done even if Excel is already open.

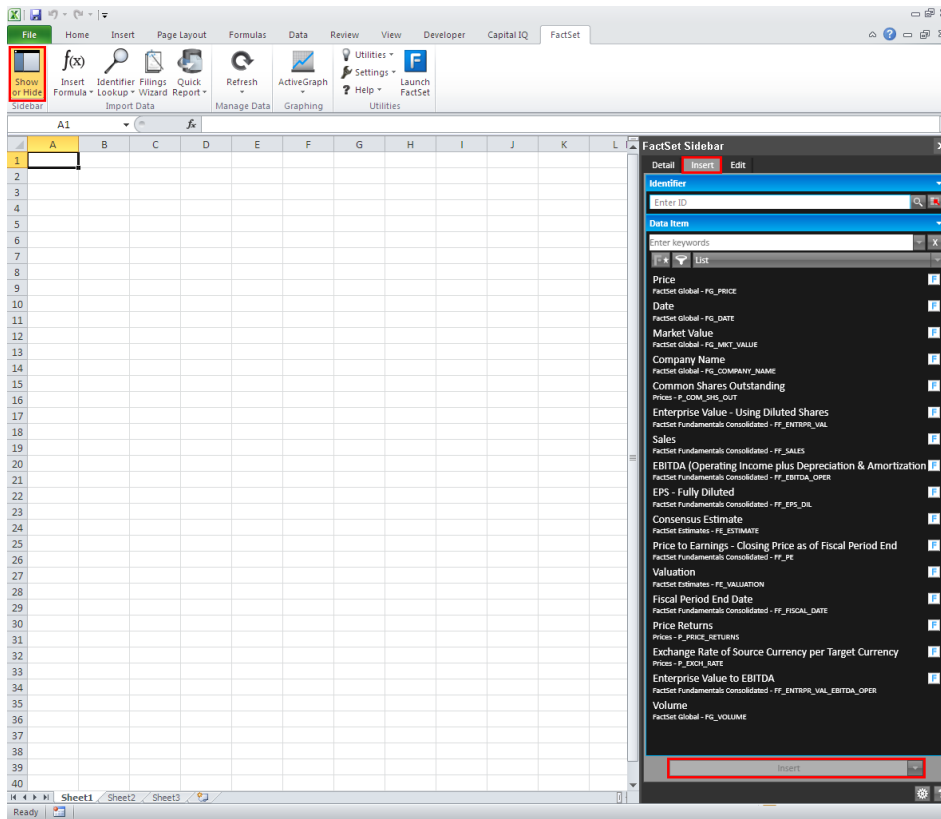


- 2) If Factset isn't working in Excel please contact the Financial Research & Trading Lab assistants.

3) When FactSet Add-In is enabled and opened properly, you will be able to see FactSet on the toolbar.



To insert a simple table of a data item versus date, you can click **Sidebar > Insert**, select the identifier(s), the data item and input details, and then hit **Insert** at the bottom.

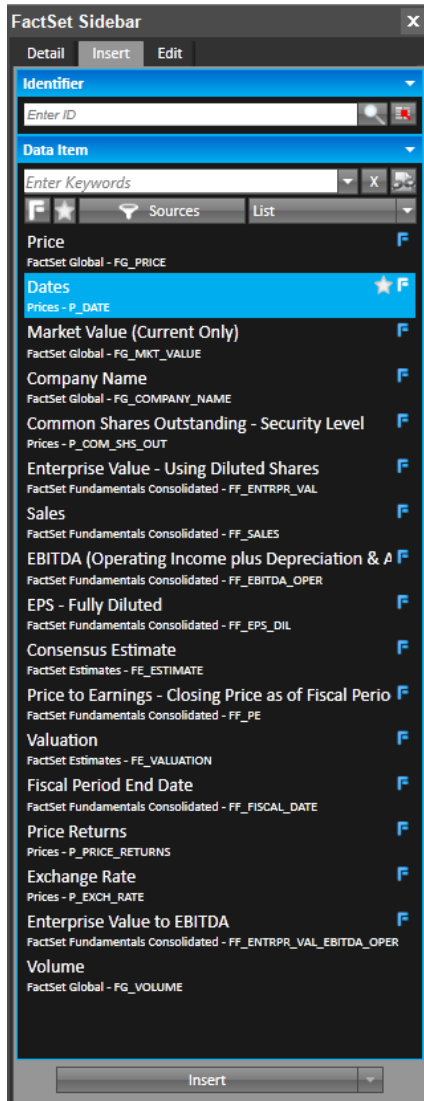


Note: You can only retrieve one type of series at once using this method.

Formula Lookup (FQL)

To look up a formula, go to the Insert Formula Dropdown Menu > Insert Formula, and the FactSet sidebar will pop up.

With Insert Formula, you can search and select the Formula you will use to download and retrieve data from FactSet.



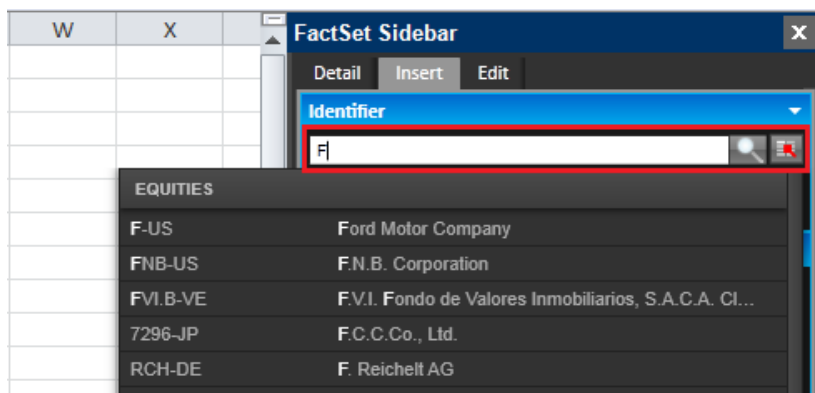
Retrieving Data

There are two ways to retrieve data – **Data Downloading** and **=FDS Codes**.

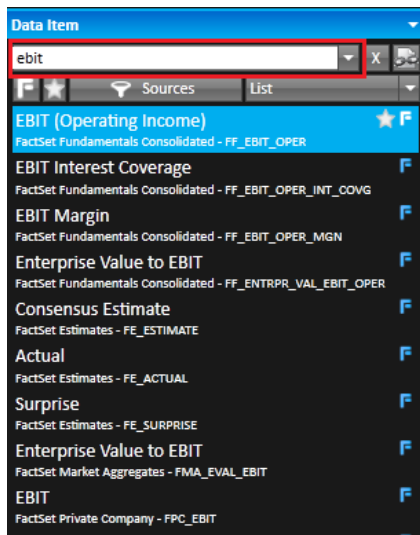
Using =FDS Codes

=FDS codes are DDE (dynamic data exchange) codes that make a direct call from Excel to FactSet's mainframe. =FDS codes contain both the identifier and the data item. They calculate in the spreadsheet with your codes, so FactSet does not create a separate data file (i.e., you only work with one spreadsheet).

The **Factset Sidebar** will allow you to identify =FDS codes through the formula look-up bar. To download data, first add security identifiers to the sidebar in the “identifier” field as shown below.



Then include your desired data through the “Data item” field, to request data search for a metric, the example uses EBIT, and press enter. The sidebar will show items that match with your search terms. Select a metric and press insert to input the data to a cell.



To change the template, you would simply change the FDS formula. As for refreshing your data, you can go to the FactSet Ribbon > Refresh Dropdown Menu > select *All =FDS Codes*

=FDS Code Syntax

The general syntax for using =FDS codes in Excel is as follows:

`=FDS("[symbol]", "[item(date)])"`

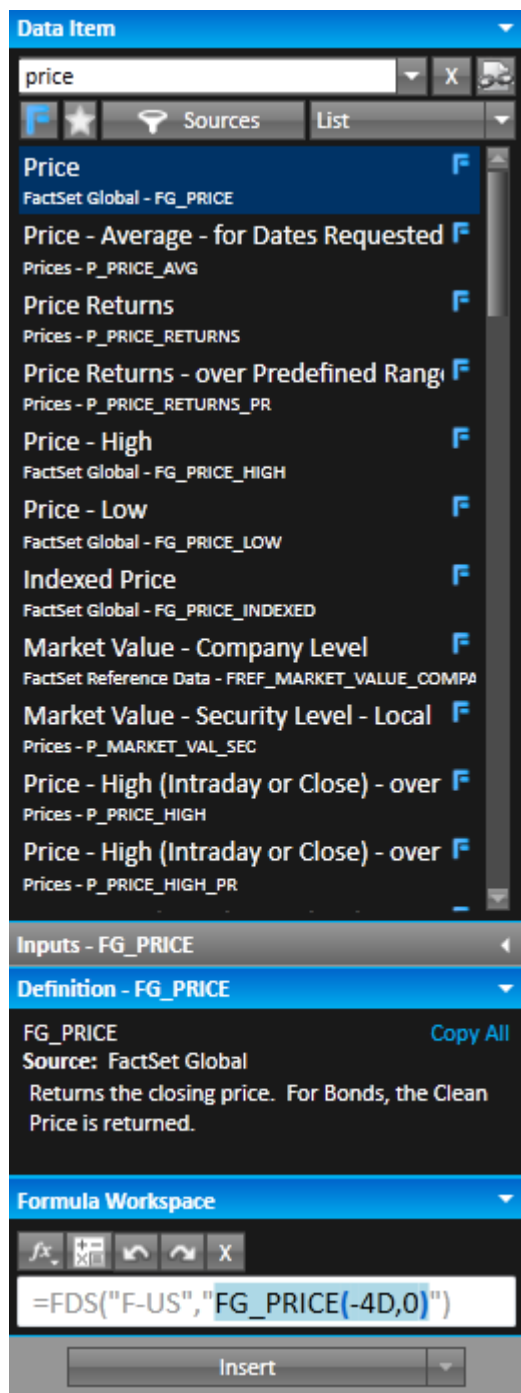
Items in square brackets signify inputs of the formula.

An example of retrieving Ford Motor Co price data is: `=FDS("F-US", "FG_PRICE(0)")`

Unlike Data Downloading codes, there is no caret (^) at the beginning of an =FDS code. Instead, the formula begins with =FDS. The symbol and item are enclosed in quotation marks.

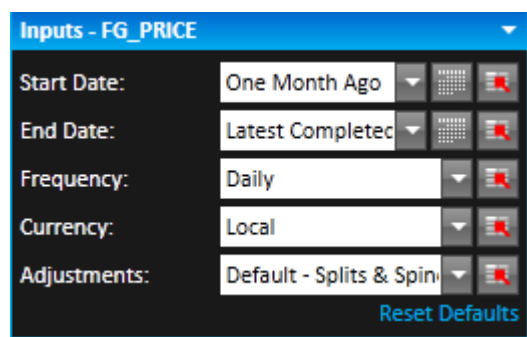
Using FDS Codes for Time Series Data

Use the Factset Sidebar to generate FDS codes for time series data. Much like the earlier function specify the identifier and data item that you wish to pull. After searching for a data item, such as price, select which formula you would like to use. In the example below we selected Price, which then shows three additional tools: Inputs, Definition and Formula Workspace.



The inputs tab allows you to specify certain characteristics for each data item. For Price you can select the Date range you want to look at, the frequency of data, currency displayed and adjustment items. The parameters below show daily price data from one month ago to the last

price in local currency accounting for stock splits and spinoffs. These parameters can be customized to suit the data being pulled.



Inputs - FG_PRICE

Start Date: One Month Ago

End Date: Latest Completed

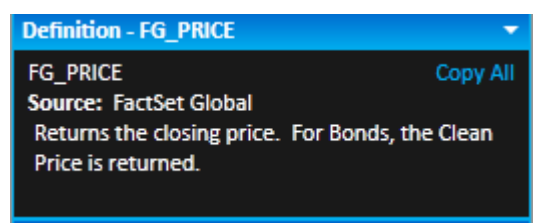
Frequency: Daily

Currency: Local

Adjustments: Default - Splits & Spin

Reset Defaults

The Definition tab shows exactly what the formula will be pulling. The picture below shows that this price formula will specifically pull the closing price.



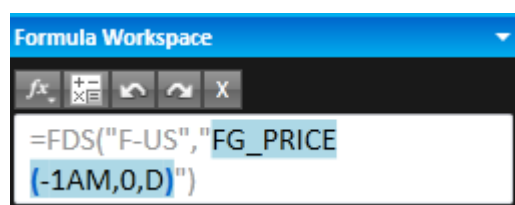
Definition - FG_PRICE

FG_PRICE [Copy All](#)

Source: FactSet Global

Returns the closing price. For Bonds, the Clean Price is returned.

The Formula Workspace tab allows you to view the FDS code that will pull the specific data that you want to pull. You can also edit this code manually to reflect a different request.



Formula Workspace

`=FDS("F-US", "FG_PRICE (-1AM,0,D)")`

When you have finalized all of the parameters you wish to pull regarding time series data click insert to retrieve the values in excel.

Data Downloading

Downloading codes are used in spreadsheets to request data from the databases on FactSet via Data Downloading. To create a template for Data Downloading, select "Series Lookup" from the "Insert Formula" dropdown menu. First select the identifiers you wish to look at through the Identifiers menu on the right.

SEARCH SOURCES FactSet Recommended

☐ Use Current Identifier

Identifier(s): FORD

Start Date: Latest Completed Period

End Date:

Frequency: Default

Currency: Local

Adjustments: Default - Splits & Spinoffs

This will open a new window where you can search for different assets or data available on Factset. You can use either the search bar or left side menu as shown below.

Identifier Lookup

FORD SEARCH

| 61 Active and Inactive Equities | Region | Identifier |
|---|----------------|------------|
| Ford Motor Company | United States | F-US |
| Ford Otomotiv Sanayi A.S. | Turkey | PROTO-TR |
| Forward Industries Inc. | United States | FORD-US |
| Galliford Try PLC | United Kingdom | GFRD-GB |
| Guildford Coal Limited | Australia | GUF-AU |
| Halfords Group Plc | United Kingdom | HFD-GB |
| Harford Bank | United States | HFBK-US |
| Hartford Financial Services Group, Inc. | United States | HIG-US |
| John Lewis of Hungerford plc | United Kingdom | JLH-GB |
| Kenford Group Holdings Limited | Hong Kong | 464-HK |
| Knutsford Bhd. | Malaysia | 5035-MY |
| Knutsford Express Services Ltd | Jamaica | KEX-JM |
| Oxford Bank Corporation | United States | OXBC-US |
| Oxford BioMedica plc | United Kingdom | OXB-GB |
| Oxford Capital Corporation | United States | OXFO-US |
| Oxford City Football Club, Inc. | United States | OXFC-US |
| Oxford Immunotec Global PLC | United States | OXFD-US |

Selections: 1

Forward Industries Inc. United States FORD

CLEAR ALL

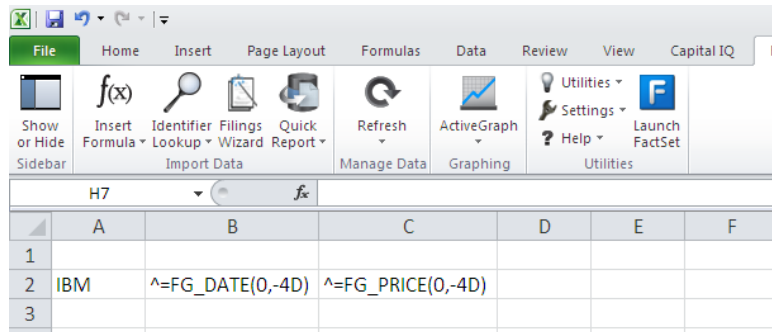
OK CANCEL

When you have selected an identifier click “Add Selected” to indicate which identifiers you would like information on, then click ok. This will bring you back to the series lookup screen. In the Series Lookup Screen you will then select which data item you want to retrieve for each identifier.

The red boxes on the screen below show the two ways to search for items: either directly in the search bar or through the suggested items in the left side menu and center display items. The green box shows how to specify characteristics of the data being retrieved such as date. The blue box shows how the data will be displayed on a new sheet. When you have requested everything click ok.

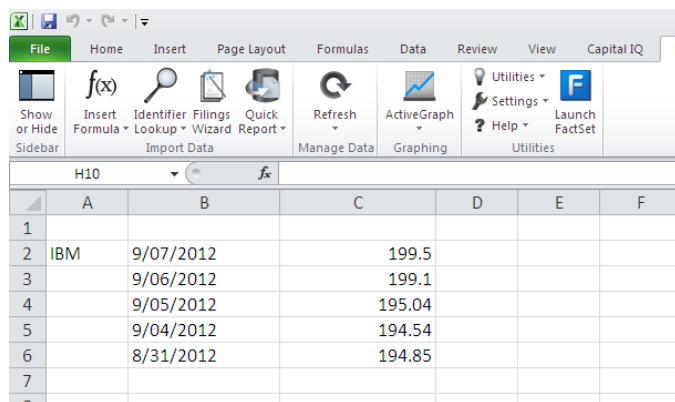
You will then be asked to save a new file which includes the downloaded data. Excel will create a separate file (or **data file**) for each identifier which displays the requested data. If you want to make any changes to the codes in your spreadsheet (formatting, adding new codes, etc.), make sure you make the changes in the original file (or **template file**), and refresh the data from the FactSet dropdown menu and view the results in the new data file.

Template File:



| | A | B | C | D | E | F |
|---|-----|--------------------------|---------------------------|---|---|---|
| 1 | | | | | | |
| 2 | IBM | \wedge =FG_DATE(0,-4D) | \wedge =FG_PRICE(0,-4D) | | | |
| 3 | | | | | | |

Data File:



| | A | B | C | D | E | F |
|---|-----|-----------|--------|---|---|---|
| 1 | | | | | | |
| 2 | IBM | 9/07/2012 | 199.5 | | | |
| 3 | | 9/06/2012 | 199.1 | | | |
| 4 | | 9/05/2012 | 195.04 | | | |
| 5 | | 9/04/2012 | 194.54 | | | |
| 6 | | 8/31/2012 | 194.85 | | | |
| 7 | | | | | | |

References:

1. Factset Fundamentals: <https://open.factset.com/products/factset-fundamentals/en-us>
2. Factset Ownership: <https://open.factset.com/products/factset-ownership/en-us>



Industry

FMC² has developed successful research collaborations with international and domestic financial services companies and organisations. These help ensure the industry relevance of FMC²'s research.

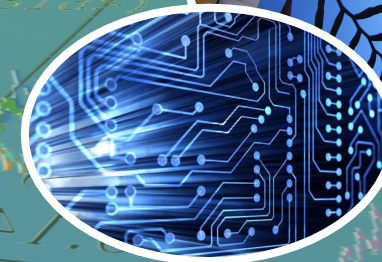
FMC² works with multiple external partners including Bank of Ireland, Deloitte Ireland, Citibank Europe, The Institute of Banking, Avolon, AerCap, GECAS, SNECMA, SMBC Aviation Capital and KPMG Ireland.

The formal collaboration between this research cluster and the private sector leads creates a benefit-in-kind situation where company sponsorship creates funding for research projects. In turn the companies benefit from research expertise from FMC² members and access to a pipeline of trained quality researchers.

Who are we?

The academic principal investigators and funded investigators involved are:
 John Cotter (Director, UCD)
 Don Bredin (UCD)
 Gregory Connor (Maynooth University)
 Paolo Guasoni (DCU)
 Julie Byrne (UCD)
 Thomas Conlon (UCD)
 Cal Muckley (UCD)
 Conall O'Sullivan (UCD)

The cluster supports a research cluster manager and a team of postdoc and PhD researchers based at UCD, DCU and Maynooth University.



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FMC²

Financial Mathematics and
 Computation Research Cluster



www.fmc-cluster.org





Financial Mathematics and Computation Cluster (FMC²)

FMC² is a *research collaboration* between Industry, University College Dublin, Dublin City University and Maynooth University. This research group brings together complementary expertise in *financial mathematics, financial economics and computational finance* to create a holistic research programme in asset and risk management.

In addition to providing support for the innovation activities of Irish-based international financial companies, a pivotal outcome of the activities of FMC² is the creation of a supply of highly skilled personnel, trained postdoctoral researchers and PhD graduates, with world-class quantitative modelling skills who will support the future growth of financial service exports.

The Vision

The objective of FMC² is to create a globally recognised research centre that will provide a critical underpinning for the future development of the international financial services sector in Ireland.

FMC² is funded by Science Foundation Ireland's Strategic Partnership programme. The object of this programme is to create partnerships between academia and industry in order to address crucial research questions, and to support the growth of research and development capacity in companies located in Ireland.



VAR

- Factor Modelling
- Dynamic Factor Structure of European Security Market Return
- Risk Measures, Connectivity and Impact on the Real Economy

Valuation

- Pricing Real Assets – Finalization, Policy and Market Implications
- Aircraft Finance and Leasing
- Energy prices and the Impact on Investment Decisions
- Valuation of contracts with embedded inflation linked options

Risk

- Operational Risk – Measurement and Mitigation
- Measuring and mitigating operational risks in financial institutions
- Operational Risk in LIBOR and other Benchmark Markets
- Rogue Trading and Banking