Building =FDS Codes

=FDS is a Microsoft Excel function that dynamically pulls data stored on FactSet servers, allowing you to automatically update your spreadsheet data. For a guided tour about building =FDS codes, launch the eLearning series on Online Assistant page 16644.

Benefits to building models with =FDS codes include:
- Allows FactSet data to be dynamically incorporated into an Excel model
- Uses Excel functionality, such as cell referencing
- Allows you to combine FactSet formulas with other Excel functions

Basic Syntax

=FDS("IDENTIFIER","DATA_ITEM(START_DATE,END_DATE,FREQUENCY)")

- Each code has two distinct parts: the security or index identifier and the formula of the item being retrieved. Both items are enclosed in quotation marks.
- You can write the identifier as an exchange ticker, such as XOM-US for Exxon Mobil Corp., or a SEDOL, such as 0798059 for BP PLC.
- This syntax is the basic syntax for =FDS codes, but the arguments will vary based on the formula you select.

Examples

| Retrieves Exxon Mobil's latest closing price | =FDS("XOM-US","P_PRICE(0D)") |
| Retrieves BP PLC's latest annual sales | =FDS("0798059","FG_SALES(0)") |

Date Frequency Options

| D Daily | AM Actual Monthly | Y Fiscal Yearly |
| W Weekly | Q Fiscal Quarterly | CY Calendar Yearly |
| AW Actual Weekly | CQ Calendar Quarterly | AY Actual Yearly |
| M Monthly | AQ Actual Quarterly | RANGE [Between 2 dates] |

Dates

=FDS codes accept both relative and absolute dates as formula arguments. An absolute date is a specific point in time, while a relative date represents a date relative to the most recently updated period.

<table>
<thead>
<tr>
<th>Absolute Date Examples</th>
<th>Relative Date Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day (MM/DD/YYYY or DD/MM/YYYY): 7/1/2017, 11/7/2017</td>
<td>Most recent trading day: 0D</td>
</tr>
<tr>
<td>Month-end: 6/2016, 4/2017, 1/2018</td>
<td>One trading day before the most recent trading day: -1D</td>
</tr>
<tr>
<td>Fiscal quarter-end: 17/1F, 2017/3F</td>
<td>Seven days before the most recent trading day: -1AW</td>
</tr>
<tr>
<td>Calendar quarter-end: 2018/1C, 2017/3C</td>
<td>Last trading day of the most recent week: 0W</td>
</tr>
<tr>
<td>Semi-annual period-end: 2017/1S, 2016/2S</td>
<td>Last trading day three weeks ago: -2W</td>
</tr>
<tr>
<td>Fiscal year-end: 2017, 2016, 15</td>
<td>One actual month from most recent trading day: -1AM</td>
</tr>
<tr>
<td>Last trading day twelve months ago: -11M</td>
<td>Last trading day of the most recent fiscal year: 0Y</td>
</tr>
</tbody>
</table>

**TIP** You can also mix absolute and relative dates using FactSet formulas. For example, entering 12/31/2017-2AW returns data as of two actual weeks (14 days) before the end of 2017.
Cell Referencing =FDS Codes

You can use string concatenation to reference dates, which is an Excel feature that combines data or text from multiple cells into one cell. This allows you to do date math and reference different parts of the =FDS code.

Syntax

Use the following syntax when creating an =FDS code with cell references:

\[ =\text{FDS}(\text{A1}, \text{"DATA_ITEM(" & \text{CELLREFERENCE}& "")}) \]

Example

The price of XOM-US as of the date in cell A1:

\[ =\text{FDS}(\text{"XOM-US"}, \text{"P\_PRICE(\"A1\")"}) \]

Using Concatenation

Replace the date with the "&cellreference&":

\[ =\text{FDS}(\text{"XOM-US"}, \text{"P\_PRICE(1/1/2016)"}) \]

Example:

\[ =\text{FDS}(\text{"XOM-US"}, \text{"P\_PRICE(1/1/2016+10D)"}) \]

Using Concatenation in Sidebar

Use string concatenation in Sidebar to easily add cell references to your =FDS codes. Click the Select Cell Reference button or type the cell reference (e.g., =A1) for the identifier or formula arguments. See Online Assistant page 16772 for more information on inserting formulas using Sidebar.
Retrieving Time Series Data

You can use =FDS codes to calculate a time series of data in Excel. To use an =FDS code to retrieve multiple points in time, you need to build an array. An array tells Excel where in the report to place the data. To calculate a time series, you need to select a start date, end date, and frequency.

To manually modify an array:
1. Highlight the number of cells in your new array. You can highlight either across the row or down the column.
2. Press the F2 key to activate the cell with the range still highlighted and edit the =FDS code.
3. Press the following keys simultaneously: CTRL+SHIFT+ENTER.

To create an array in Sidebar:
1. Select the cell where you want your time series of data to begin.
2. Choose the Insert tab in Sidebar and search for or enter the cell reference for your identifier in the Identifier section.
3. Search for and select your formula in the Data Item section.
4. Enter the start date, end date, and frequency for your array within the Inputs section.

TIP > You can also easily edit an array of data using Sidebar. To edit, select any part of the array, and then choose the Edit tab in Sidebar. Adjust the arguments as desired and click the Modify button.
Applying Functions and Performing Calculations

Statistical Functions
Statistical functions calculate statistics on groups of numbers. All statistical functions ignore non-available data.

Example
The following code returns the average exchange rate between U.S. dollars and euros for the last year.

=FDS("XOM-US", "AVG(P_EXCH_RATE(USD,EUR,-1AY,0D,D))")

Logical Functions
Logical functions let you test various conditions before including a value in a report and are useful for dealing with non-available data. An IF statement is a common logical function that returns a designated value if the test condition is true and returns a different value if the test condition is false.

Example
The following code returns the word UP if the one-day price change is greater than zero and returns the word DOWN if the one-day price change is less than or equal to zero.

=FDS(A1, "IF(P_PRICE_CHANGE(0D,-1D)>0, "UP","DOWN")")

Performing Calculations
You can use =FDS codes to produce ratios on the fly by dividing one FactSet formula by another (e.g., Enterprise Value divided by Sales).

Example
The following code calculates Enterprise Value to Sales for BP PLC as of the latest completed fiscal year.

=FDS("BP-GB", "FF_ENTRPR_VAL(ANN,0Y,,RF)/FF_SALES(ANN,0Y,,RF)")

Functions and Sidebar
You can use Sidebar to easily add functions to formulas in your templates. The following walks you through an example of how to add a function using Sidebar.

To build the average exchange rate formula using Sidebar:
1. Select the cell where you want to add your code.
2. Search and select the desired exchange rate formula in the Data Item section.
3. Enter your formula arguments.
4. Expand the Formula Workspace section.
5. Click the Function button to launch the Functions Search dialog, which lists the most commonly used functions.
6. Select "AVG - Average" from the list and click the Apply button. The function is then added to your Formula Workspace.
7. Click the Insert button to add the formula to your template.

Calculations and Sidebar
Within the Formula Workspace section, select the part of the formula where you want to add an operator. Click the Operator button and choose the operator. (You can also type directly into the workspace.)