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# Contents

About this Document .............................................................................................................. 1
Intended Readership ................................................................................................................. 1
In this Document ...................................................................................................................... 1
Feedback ................................................................................................................................... 1

## Chapter 1  Thomson Reuters Spreadsheet Link ................................................................. 2

## Chapter 2  Template Library ............................................................................................... 3
  View Templates (Template Library) ....................................................................................... 3
  Upload Templates (Template Library) .................................................................................. 3

## Chapter 3  Constituent Lookup .......................................................................................... 5
  Look Up Constituents (Constituent Lookup) ......................................................................... 5
  Customize Your Export (Constituent Lookup) ...................................................................... 6

## Chapter 4  Data Item Lookup ............................................................................................ 7
  Browse by Category (Data Item Lookup) ............................................................................. 7
  Search by Data Item Name (Data Item Lookup) ................................................................. 8
  Set Parameters (Data Item Lookup) ................................................................................... 9
  Learn About Creating a Time Series (Data Item Lookup) ................................................ 12
  Apply an Identifier to a Data Item .................................................................................... 12
  Customize Your Export (Data Item Lookup) ..................................................................... 14
  Parameter Definitions - Alphabetical List ........................................................................ 15
  Parameter Definitions - Categorized List .......................................................................... 26

## Chapter 5  Identifier Lookup .............................................................................................. 29
  Look up a Company, Equity Index, or IBES Global Aggregate (Identifier Lookup) ............. 29
  Look up Foreign Exchange Rates (Identifier Lookup) ...................................................... 30
  Advanced Options for Looking up a Public Company (Identifier Lookup) ....................... 31
  Advanced Options for Looking up a Private Company or Public and Private Companies (Identifier Lookup) ................................................................. 32
  Advanced Options for Looking up an Equity Index (Identifier Lookup) ......................... 34
  Advanced Options for Looking up IBES Global Aggregates (Identifier Lookup) ............. 35
  Advanced Options for Looking up Foreign Exchange Rates (Identifier Lookup) ............. 37
  Change the View of the Results (Identifier Lookup) ....................................................... 38
  Customize Your Export (Identifier Lookup) ..................................................................... 38
  Datastream Country Identification Prefixes ...................................................................... 39

## Chapter 6  Aggregate Builder ............................................................................................... 41
  Create a Custom Aggregate (Aggregate Builder) ............................................................... 41
  Save a Custom Aggregate (Aggregate Builder) ................................................................... 42
  Open a Saved Aggregate (Aggregate Builder) ................................................................... 43
Chapter 7   Chart Builder ..................................................................................................................... 46
Create a Single Equity Price Chart (Chart Builder) ............................................................................. 46
Create a Multiple Equity Price Chart (Chart Builder) .......................................................................... 47
Create a Custom Chart (Chart Builder) ............................................................................................... 48
Create a Total Return Chart (Chart Builder) ....................................................................................... 49
Create a Shares Traded Analysis Chart (Chart Builder) ..................................................................... 50
View Chart Numeric Table Data (Chart Builder) .................................................................................. 52

Chapter 8   Expression Builder .............................................................................................................. 53
Build an Expression Starting with Data Items (Expression Builder) ..................................................... 53
Set Parameters for Data Items (Expression Builder) .......................................................................... 55
Build an Expression Starting with Analytical Functions (Expression Builder) ............................... 56
Build an Expression by Typing in the Expression Box (Expression Builder) ................................... 58
Save an Expression (Expression Builder) ........................................................................................... 59
Expression Area (Expression Builder) ................................................................................................. 62
Customize Your Export (Expression Builder) ..................................................................................... 63
Analytical Functions ........................................................................................................................... 64
Mathematical Operators ..................................................................................................................... 112

Chapter 9   Funded Portfolio Builder .................................................................................................... 115
Create a Funded Portfolio .................................................................................................................... 115
Import a Funded Portfolio .................................................................................................................. 116
Save a Funded Portfolio or Watchlist .................................................................................................. 117

Chapter 10  Watchlist Builder ............................................................................................................... 118
Create a Watchlist ............................................................................................................................... 118
Import a Watchlist ............................................................................................................................. 118

Chapter 11  Report Builder .................................................................................................................... 120
Custom Reports (Report Builder) ....................................................................................................... 120
Ownership Reports (Report Builder) .................................................................................................. 123
Reuters As Reported Fundamental Data Reports (Report Builder) .................................................... 130
Adjust and Apply Formats (Report Builder) ....................................................................................... 132
Customize Your Export (Report Builder) .......................................................................................... 132

Chapter 12  Screen Builder ................................................................................................................... 134
Build a Screen (Screen Builder) .......................................................................................................... 134
Save a Screen (Screen Builder) ........................................................................................................... 144
Open a Screen (Screen Builder) ........................................................................................................ 144
Run a Screen (Screen Builder) ............................................................................................................ 144
Index

218
About this Document

Intended Readership

The Thomson Reuters Spreadsheet Link User Guide teaches new users and those who recently upgraded to Thomson Reuters Spreadsheet Link version 2.3 how to use Thomson Reuters Spreadsheet Link so that they can combine historical and real-time data with their own portfolio holdings information and also target and assess comparable companies, spot trends, create sophisticated financial models and streamline the pitch book creation process directly in Excel. You must have entitlements for some content and functionality. Some content is not available to all users. For information on your entitlements, contact your sales representative.

In this Document

This document outlines the general workflow of using each component of Thomson Reuters Spreadsheet Link so that users can perform their own calculations and models in Excel.

Detailed workflow information is available in the Thomson Reuters Spreadsheet Link Quick Start Guide, available from the Business Services Consulting Team at Thomson Reuters, or in the F1 help files in Thomson Reuters Spreadsheet Link.

Feedback

If you have any comments on this document please contact the Thomson Reuters Business Services Consulting Team at trconsulting@thomsonreuters.com.
Chapter 1   Thomson Reuters Spreadsheet Link

Thomson Reuters Spreadsheet Link delivers an extensive Thomson Reuters global database of information through a user-friendly Microsoft Excel interface. It allows you to combine historical and real-time data with your own watchlist/portfolio holdings information, target and assess comparable companies, spot trends, create sophisticated financial models, and streamline your workflows directly in Excel.

With Thomson Reuters Spreadsheet Link, you can:

• create a report with customized equity tables, ownership data, Reuters As Reported financial data, and charts.
• identify potential investment opportunities by screening for companies.
• create a ranking for companies, using multiple data items or expressions as factors.
• incorporate custom expressions into your analytical models and reports.
• view Thomson Reuters Spreadsheet Link’s templates or create and upload your own.
• manage your templates, custom watch lists, portfolios, expressions, screens, and aggregates.
• view the constituents of custom portfolios, watch lists, and benchmark indexes.
• upload your company’s proprietary or custom data, including text, calculations, or other values.
• build custom aggregates to track groups of securities over time and compare individual securities to custom peer group averages.
• look up tickers and other company identifiers, indexes, exchange rates, and data items, including real-time, fundamental, estimate, and pricing data.
• click Reuters financials or Worldscope data item values to open and view their original source documents so that you can validate or audit the items.
• set refresh options, user options, and global defaults.
Chapter 2  Template Library

Thomson Reuters Spreadsheet Link Template Library allows you to access your saved templates and Thomson Reuters templates from one centralized library. You can upload templates to the Thomson Reuters server and give them names and descriptions.

View Templates (Template Library)

Templates are spreadsheets with data items in a specialized format (for example, borders, sizing, etc). You can upload templates, adding descriptions and permissions to be saved on Thomson Reuters servers.

To view a template
1. On the Thomson Reuters menu, click Templates.
2. In the Templates section, open a folder and select a template.
3. To search for a template, type all or part of its name in the box.
4. Click to search all folders or to select a single folder to search.
5. To export the template to Excel, click Export.

Upload Templates (Template Library)

Uploading previously saved templates lets you store templates on the Thomson Reuters server and add permissioning and descriptions.

To upload templates
1. In the Template Library window, select the folder you would like to upload a template to.
   You cannot upload templates to the Thomson Reuters Folder. Templates saved in the Personal Folder are only available to you. Templates saved in the Shared Folder are available to all users in your firm.
2. Click Upload.
3. Browse for a spreadsheet by clicking the File icon or type the file's location in the search bar.
4. (Optional) In the appropriate boxes, type the name and description.
5. Click Upload.
Chapter 3  Constituent Lookup

You can use the Constituent Lookup to search for an index, portfolio, or watch list, and export the constituents to your spreadsheet. In addition, you can view weights in indexes and all portfolios. You can view shares in the funded portfolios.

Look Up Constituents (Constituent Lookup)

You can use the Constituent Lookup to search for an index, portfolio or watch list, and export the constituents to your spreadsheet.

To look up constituents
1. On the Thomson Reuters menu, click Look up Constituents.
2. From the Search drop-down, select a search type.
3. From the Keyword drop-down, select Starts With, Contains, or Is Exactly.
4. Type all or part of a name in the textbox.
5. Click .
6. Select a result from the Search Results box. The Constituents section populates based on the result item.
7. To sort results by a category other than name, click the appropriate column head. To reverse the order, click the column head again.
8. To add columns, right click the column heading, select Add Columns, add columns and click OK.
9. To move column headings up or down, click the heading topic in the Add Columns window and click either Move Up or Move Down. Click OK.
10. To view or hide index details or identifiers (constituent information on the right-hand side), click the corresponding or .
11. To change the date as of which the results are valid, type over the date in the As Of box, or click , and select a date.
12. To export the results to a spreadsheet, click Export. To customize the export, see Customize Your Export (see “Customize Your Export (Constituent Lookup)” on page 6).
13. To start a new search, click **New Search**.

### Customize Your Export (Constituent Lookup)

You can customize your export and defaults for future exports to Excel.

**To customize export options**

1. After using the Constituent Lookup, click on the Excel spreadsheet where you would like to export your data.
2. To customize export settings, click the **Export** drop-down, and choose **Export As**.
3. Select to export data as an Index, Portfolio, Watchlist, or Constituents.
4. If exporting constituents, select Calculation Type, Identifier Type, Layout, Data Items, Headers, and Clean-Up criteria from the appropriate drop-downs.
5. To save your export settings, click the **Keep these settings when exporting** data check box.
6. To view the options every time you export, select **Always show these settings when exporting data**.
7. Click **OK**.
Chapter 4  Data Item Lookup

The Data Item Lookup locates and exports data stored on the Thomson Reuters database. To help you locate this data easily, the lookup categorizes data items and orders them according to their typical use. You can then export these data items directly onto an Excel spreadsheet.

You can access all the data items available in Thomson Reuters Spreadsheet Link in Data Item Lookup. You can select specific data items and apply parameters to them, giving you total control and full transparency of the calculation methodology.

Browse by Category (Data Item Lookup)

To browse for a data item
1. On the Thomson Reuters menu, click **Look up Data Items**.
2. From the drop-down, select an entity type.
3. Specify one or more identifiers by typing (see "Type Identifiers Manually Before Exporting (Data Item Lookup)" on page 12), searching for (see "Search for Identifiers Before Exporting (Data Item Lookup)" on page 12), or referencing a cell that contains them (see "Reference Identifiers by Cell Before Exporting (Data Item Lookup)" on page 14).
4. From the **Category** area, click the arrow next to a category in the expandable tree.
5. To filter the list of data items in the **Item** area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
6. In the **Item** area, click a data item.
7. To set the parameters for the data item in the **Parameters** tab of the panel on the right, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
8. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
9. To export the data item, click **Export**. To customize the export, see Customize Your Export (see "Customize Your Export (Data Item Lookup)" on page 14).
Filter Data Items (Data Item Lookup)

Before you filter a data item in the Item area of Data Item Lookup or Expression Builder, you must select a category in the Category area. To search on all available data items, select All in the category area.

To filter data items

1. To view the name of each data item, click the Name View icon in the Item area.
2. To view the codes for each data item, click the Code View icon in the Item area.
3. To filter the list of data items in the Items area, type a filter (for example, "current" or "primary") in the Item box. The list of data items updates to match your filter as you type.
4. To view a description for a data item, select a category and a data item, and then click the Description tab in the right pane.

Learn More about a Data Item (Data Item Lookup)

You can view detailed information of any data item by reading its description and using the Data Item Information Viewer.

The description for each data item in the Description tab of the right panel includes a definition, properties and signature.

The Data Item Information Viewer, available through a right-click menu, also includes the definition but also displays the content set to which the data item belongs, and, if applicable, the fiscal calendar, frequency, scale, code, return type, signature, and/or ID.

To view more information on a data item

1. After locating a data item by category (see “Browse by Category (Data Item Lookup)” on page 7) or name (see “Search by Data Item Name (Data Item Lookup)” on page 8), click the Description tab in the right panel.
2. To get further information, right-click the data item in the Item area (middle panel).
3. From the pop-up menu, click Get Information.
4. In the Data Item Information dialog, if necessary, scroll down in the Overview area to view all the information.
5. When finished, click Close.

Search by Data Item Name (Data Item Lookup)

To search for a data item by name

1. On the Thomson Reuters menu, click Look up Data Items.
2. From the drop-down, select an entity type.
3. Specify one or more identifiers by searching for them (see "Search for Identifiers Before Exporting (Data Item Lookup)" on page 12), typing them manually (see "Type Identifiers Manually Before Exporting (Data Item Lookup)" on page 12), or referencing cells on an Excel spreadsheet (see "Reference Identifiers by Cell Before Exporting (Data Item Lookup)" on page 14).

4. In the Item box, type a full or partial data item name.

5. In the Category area, click a category that has a positive number of results in parentheses.

6. To filter the list of data items in the Item area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).

7. In the Item area, select a data item.

8. To set the parameters for the data item, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).

9. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).

10. To export the data item, drag and drop it into your spreadsheet, or click Export. To customize your export, see Customize Your Export (see "Customize Your Export (Data Item Lookup)" on page 14).

Set Parameters (Data Item Lookup)

You can set the parameters for any data item. Parameters with an asterisk denote required information.

All parameters are grouped into Basic Parameters, Advanced Parameters, and Settings and vary according to data item category.

For example, data items in the Descriptive Information category have different parameters from data items in the Financials category. In addition, data items within specific categories may have different parameters. For example, in the Corporate Actions category, the Current Expected Annual Dividend and Split Factor data items have some different parameters. To view a complete list of parameters, see the parameters list (see "Parameter Definitions - Alphabetical List" on page 15).

Basic parameters are those that are required or commonly used.

As you select data items, the Data Item Lookup displays the appropriate function code in the Formula Bar at the bottom of the Data Item Selector area. If you are familiar with the function code syntax, you can manually edit it in the formula bar (see "Formula Bar (Data Item Lookup)" on page 10).

To set data item parameters
1. After locating a data item by category (see "Browse by Category (Data Item Lookup)" on page 7) or name (see "Search by Data Item Name (Data Item Lookup)" on page 8), scroll down and/or click in the Parameters tab of the panel on the right, to display all parameters.

2. To set parameters for a data item, click the drop-down next to any of the settings. An asterisk denotes required information.

3. To set the date parameter, see Select a Date (see "Select a Date (Data Item Lookup)" on page 9).

4. To view detailed information about the data item, use the Information Viewer (see "Learn More about a Data Item (Data Item Lookup)" on page 8).

5. To export the data item, click Export. To customize your export, see Customize Your Export (see "Customize Your Export (Data Item Lookup)" on page 14).

Select a Date (Data Item Lookup)

For detailed information on date selection and syntax, see Date Syntax (on page 207).
To select the date as of which you want current data
- Under Basic Parameters under Date, click the arrow in the blank drop-down next to As Of, and make a selection.

To select data from the last $n$ number of a frequency
1. Under Basic Parameters under Date, click the drop-down arrow next to Last.
2. Type or select a number.
3. Click the arrow in the blank drop-down, and select a frequency, More (see "Learn Frequencies (Date Syntax)" on page 210), or Reset.
   If you select More, select a frequency from the Select Frequency dialog, and click OK.

To select a start date, end date, and/or frequency
1. Under Basic Parameters under Date, click the drop-down arrow next to Start.
2. Click the arrow in the blank drop-down next to Start Date, and make a selection. Repeat for End Date and Frequency.

Formula Bar (Data Item Lookup)
The Formula Bar at the bottom of the Data Item dialog resembles the formula bar found in Excel. In the Data Item Lookup, the Formula Bar displays the following syntax:

- Data_Item(Parameters)
The syntax updates as you select data item categories, data items, and parameters. You can edit the formula displayed in the Formula Bar, but the Data Item Lookup does not check for correct syntax.

Change Your Output Options (Data Item Lookup)
Thomson Reuters Spreadsheet Link provides multiple output options that you can select from the Output drop-down in the third panel of Data Item Lookup. The output options available depend on the data item you select. When you select an output option other than Value, syntax is appended to the formula to reference the chosen output. For example, if you select "Date" from the Output drop-down, "Date" is appended to the formula.

From the Data Item Lookup, you can retrieve dates automatically by selecting Date from the Value drop-down in the Parameter section for the selected data item. You can also export dates from the Export heading.

The following shows available outputs and their descriptions:

<table>
<thead>
<tr>
<th>Output</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Value of the requested item.</td>
</tr>
<tr>
<td>Date</td>
<td>Date associated with the returned data.</td>
</tr>
<tr>
<td>CalcDate*</td>
<td>Date on which the item was calculated.</td>
</tr>
<tr>
<td>Status</td>
<td>Explanation (see &quot;Status Codes (Data Item Lookup)&quot; on page 11) of null values.</td>
</tr>
<tr>
<td>Name</td>
<td>Name of the data item as it appears in the formula.</td>
</tr>
<tr>
<td>Description</td>
<td>Description of the selected data item.</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>DisplayName</td>
<td>Display name for the data item.</td>
</tr>
<tr>
<td>Currency</td>
<td>Currency in which the data item is denominated.</td>
</tr>
<tr>
<td>PeriodEndDate*</td>
<td>Period end date for the requested data item.</td>
</tr>
<tr>
<td>Footnote</td>
<td>Footnote text from Thomson Reuters Spreadsheet Link for forward-looking estimates.</td>
</tr>
</tbody>
</table>

* In Data Item Lookup, you can export CalcDate and PeriodEndDate.

**Status Codes (Data Item Lookup)**

.Status returns a code that corresponds to a description of why a function call returns a null value. If a function call does not return a null value, then .Status returns a "0."

The table below shows the definitions for each status number that is returned when you query a data item property .Status (for example, TF.PR.PriceClose().Status).

<table>
<thead>
<tr>
<th>Status Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Success</td>
</tr>
<tr>
<td>1</td>
<td>Permission Denied</td>
</tr>
<tr>
<td>2</td>
<td>Date Permission Exceeded</td>
</tr>
<tr>
<td>3</td>
<td>Not Installed</td>
</tr>
<tr>
<td>4</td>
<td>Entity Not Supported for Item</td>
</tr>
<tr>
<td>5</td>
<td>Missing Exchange Rate Data</td>
</tr>
<tr>
<td>6</td>
<td>Exchange Rate Permission Denied</td>
</tr>
<tr>
<td>7</td>
<td>Incompatible Range</td>
</tr>
<tr>
<td>8</td>
<td>Quarterized Annual Number</td>
</tr>
<tr>
<td>9</td>
<td>Quarterized Semi-Annual Number</td>
</tr>
</tbody>
</table>
Learn About Creating a Time Series (Data Item Lookup)

Data items that return time series data have three specific times series parameters: start date (sdate), end date (edate) and frequency (frq). Start and end dates define the window of time for which data is requested. Frequency defines the intervals for which data is returned within that window. When selecting a data item from either the Data Item Lookup or Expression Builder, the third panel displays relevant parameters for the selected item. If these parameters are available, the data item returns time series data.

To learn about defining start and end dates and frequencies, see Date Syntax (on page 207) and Learn Frequencies (see “Learn Frequencies (Date Syntax)” on page 210).

Apply an Identifier to a Data Item

You must apply an identifier, such as a ticker, to a data item before exporting the data item to your spreadsheet. You can apply the identifier by typing, searching, or referencing a cell with the identifier in it.

Type Identifiers Manually Before Exporting (Data Item Lookup)

To type identifiers manually before exporting a data item

1. In the Identifier(s) box of the Identifiers section, type a ticker.
2. To type multiple identifiers, separate each with a space (for example, “ibm goog msft”).

Search for Identifiers Before Exporting (Data Item Lookup)

To search for identifiers before exporting a data item

1. In the Identifiers section, click the Search button.
2. From the drop-down, choose Select an identifier (see “Look up a Company (Identifier Lookup)” on page 13).
Look up a Company (Identifier Lookup)

In Thomson Reuters Spreadsheet Link, you can search for a company by a number of keywords, depending on your entitlements:

- partial or full name
- ticker
- Thomson ticker
- IBES ticker
- SEDOL with or without check digit
- CUSIP with or without check digit
- ISIN
- Perm ID
- Barra ID
- QA ID
- permanent ID
- Worldscope ID
- Reuters Report Number (RepNo)
- Datastream Code
- Datastream Mnemonic (More information in Datastream Country Identification Prefixes (on page 39))
- TKC

After you search, you can export the results to a worksheet.

To look up a company
1. From the Keyword drop-down, select an identifier type.
2. From the adjacent drop-down, select Starts With, Contains, or Is Exactly.
3. In the textbox, type all or part of the identifier you chose (for example: Micro).
4. To filter your search further, see Advanced Options for Looking up a Company (see "Advanced Options for Looking up a Public Company (Identifier Lookup)" on page 31).
5. Click Show Results.
6. If applicable, click the arrows in the Search Results box to view security and quote level information.
7. To view more information in a pop-up, select a company, right-click and click Get Information.
8. Change the view of the results (see "Change the View of the Results (Identifier Lookup)" on page 38).
9. To look up a different company, click **New Search**.

**Reference Identifiers by Cell Before Exporting (Data Item Lookup)**

To reference identifiers by cell before exporting a data item

1. In the **Identifiers** section, click the **Search** button.
2. From the drop-down, select **Reference a Cell**. The **Data Item Lookup** dialog collapses into a cell reference dialog.

   1. With the cell reference dialog open, click a cell on an Excel spreadsheet.
2. In the cell reference dialog, click the icon ▶️.

**Customize Your Export (Data Item Lookup)**

You can customize your export and set your defaults for future exports to Excel. Export options differ by component.

To customize your export of a data item to Excel

1. After locating a data item by category (see “Browse by Category (Data Item Lookup)” on page 7) or name (see “Search by Data Item Name (Data Item Lookup)” on page 8) and setting the parameters for a data item (see “Set Parameters (Data Item Lookup)” on page 9), click on the Excel spreadsheet where you would like to export your data.
2. In the Data Item Lookup dialog, click the **Export** drop-down, and choose **Export As**.
3. When exporting a data item, select **Calculation Type**, **Layout**, **Headers**, and **Clean-up** criteria from the appropriate drop-downs.
4. To keep these settings as a default when exporting data, select **Keep these settings when exporting data**.
5. To view the options every time you export, select **Always show these settings when exporting data**.
6. To export the data item to Excel, click **OK**.

![Export the data in Data Item Lookup as:](image)

**Parameter Definitions - Alphabetical List**

**Adjustment (Parameter)**

For per share data items, the *Adjustment* parameter controls whether the value is returning as a stock split and spin-off adjusted value, or unadjusted for stock splits and spin-offs. The default value is Adjusted.

**Enumerations**

- **Fully Adjusted (Adjusted)** adjusts value for stock splits and spin-offs.
- **Unadjusted (Unadjusted)** does not adjust for stock splits and spin-offs.

**Align Type (Parameter)**

Thomson Reuters Spreadsheet Link retrieves data according to its date.

The *AlignType* parameter allows you to specify whether the date of the data aligns with the fiscal period end date (*PeriodEndDate*), preliminary report date (*ReportDate*), or final filing date (*FilingDate*).

Align Type only applies when the period parameter is in relative fiscal format (i.e. FY0, -1FQ, etc.). If the period is absolute (i.e. FY2007, 1FQ2006, etc) or calendar (i.e. 0CY, CY2006, etc), then Align Type has no effect.

If you do not specify an AlignType, the system defaults to the preliminary report date.

The only time there is a difference between the values retrieved using these options is during the short period of time between a company's fiscal period date and preliminary report date, or between preliminary report date and filing date.

As an example, for fiscal year 2007, IBM's fiscal period end date was 12/31/2007, preliminary report date was 1/14/2008, and full filing date was 2/26/2008.

**Enumerations**

- **PeriodEndDate** Aligns data with the with the fiscal period end date of the company.
- **PrelimDate** Aligns data with the preliminary report date of the company.
- **FilingDate** Aligns data with the fully reported filing date of the company. This is the date on which the company files its financial statements with the SEC or other governing body. Available for financials content only.
- **PrelimOrFiling** Aligns data with PrelimDate if data is available. If data is not available as of PrelimDate, then aligns with FilingDate. Available for financials content only.

**Brokers (Parameter)**

The *Brokers* parameter defines which specific brokers to include or exclude from Detail or Custom Summary calculations. If you do not specify the Brokers parameter, the calculation defaults to the Broker Settings in Options. If you do not specify Broker Settings, then the calculation defaults to include all brokers.

Note that when referencing brokers, the broker code is used, not the broker name (for example broker code "BEAR" is used, not broker name "Bear, Stearns & Co."). To include brokers in your calculation, use the "+" symbol in your
"Brokers" parameter. To exclude brokers in your calculation, use the "-" symbol in your "Brokers" parameter (see enumerations below).

**Enumerations**

Brokers={+MERRILL, BEAR} - Include only estimates from Merrill Lynch and Bear, Stearns & Co. in the calculation.

Brokers={-MERRILL} - Include estimates from all brokers except for Merrill Lynch in the calculation.

**Calendar (Parameter)**

The calendar parameter reflects data based on the calendar of a specific exchange, based on a five-day calendar, or based on a seven-day calendar.

For example, if you trade on the London exchange and want the pricing data requested to be returned with dates that correspond to United Kingdom exchanges, you can change your calendar preference to United Kingdom exchanges.

You can set the calendar globally in Options (see "Change Exchange Calendar Settings (Options)" on page 192), but setting the calendar parameter overrides the setting in Options for the data item you have selected.

If you do not specify this setting, the calendar reflects a five-day calendar.

This only applies when the frequency is "daily" (D) for trading days in a time series data request.

**Clean-up (Parameter)**

Clean-up overwrites either a single cell of data or an array of data items with new or refreshed data.

It also deletes all populated cells adjacent to the new array, including data that belonged to the prior array, until it reaches a blank cell.

For example, if you request an array of data in cells A1:A10, and Clean-up overwrites or refreshes data that previously populated cells A1:A12, Clean-up overwrites the data in A1:10 with the new data and deletes the data in cells A11:A12.

If you do not want clean-up, the new data overwrites the data currently in the cells, but any existing data in adjacent cells remains.

For example, if you have data in cells A1:12 and request an array of data that fills cells A1:A10, the new data overwrites or refreshes data that previously populated cells A1:A10, but the previous data remains in cells A11:A12.

If you do not make a clean-up selection, Thomson Reuters Spreadsheet Link defaults to clean-up for arrays but not for a single value (Cleanup=1 or Yes for Arrays).

This setting does not appear in the Parameters tab but does appear in the Export As dialog when you are exporting data to a spreadsheet.

If you accept the default setting, Cleanup=1 does not appear in the function call.

**Enumerations**

0=No clean-up

1=Clean-up for arrays but not for a single value

2= Clean-up for arrays or single values

**Currency**

You can reflect all monetary values of a data item in different currencies. You can set the currency in which you want to view all monetary values in Thomson Reuters Spreadsheet Link in Options (see "Change Currency Settings (Options)" on page 192), but setting the currency parameter overrides the global option setting on a data item level.
Data Direction (Parameter)

Data Direction sets the items on your spreadsheet to populate with the time series going down, or the time series going across.

If you do not specify a direction, the default is for the time series to go down.

This setting does not appear in the Parameters tab but does appear in the Export As dialog when you are exporting data to a spreadsheet.

End Date (Parameter)

Together, the edate (end date), sdate (start date), and freq (frequency) parameters return time series data.

Edate and sdate define a time period over which data is returned. You can define each as either a relative or absolute date.

The freq parameter determines the frequency at which Thomson Reuters Spreadsheet Link returns data.

EndNum (Parameter)

The StartNum (Start Number) and EndNum (End Number) parameters are required of all data items that return a variable number of data points for a given date or date range. This includes detail estimate data items and data items containing “array” in their display name.

For detail-estimate data items

For detail-estimate data items, StartNum and EndNum indicate how many estimates to return per broker or analyst in chronological order for the period and date range specified.

For example, “0” indicates the current estimate for each broker or analyst, “1” or “-1” represents the previous estimate, “2” or “-2” represents the estimate before that, and so on. If you only want the current estimate for all brokers, or the specified broker, then set StartNum=0. If you want both the current estimate and the prior estimate for these same brokers, then you set StartNum=0 and EndNum=-1 or EndNum = 1. In this case, Thomson Reuters Spreadsheet Link returns the estimates in chronological order by announce date.

For data arrays

For data items with “array” in their display name, StartNum is set to 0 by default but may be any integer from 0 to the maximum number of data points available for the date or date range.

By default, Thomson Reuters Spreadsheet Link retrieves only a single data point. If more than one data point is available, you can retrieve multiple points by setting the EndNum to an integer value of -1 or less. If the EndNum is significantly less than the smallest index available, this will not affect your results. The purpose of these parameters for “array” items is to prevent Thomson Reuters Spreadsheet Link from overwriting important data when your worksheet refreshes.

For Ownership data Items

For Ownership data items for which you can set StartNum and EndNum, type -1 for only the StartNum or EndNum to retrieve the entire dataset up to 8000, the maximum amount allowed for owners.

Typing a positive number retrieves the relevant output rows and limits the results up to that row. For example, if you set StarNum to 0 and EndNum to 2, Thomson Reuters Spreadsheet Link retrieves the first three results (0, 1, and 2).

Typing a negative EndNum gives you all results from the StartNum that you typed. For example, if StartNum=10 and EndNum=-1, Thomson Reuters Spreadsheet Link retrieves all results starting from 10.

Factor Type (Parameter)

The Factor Type parameter is used with Barra Beta and includes styles, industry, currency, and country. Country factor is applicable only with the Europe Model.
The Barra Integrated Models (country-specific models) attribute the explainable portion of an asset's return to the local factors at work in each market. The factors may differ significantly from market to market. By modeling each market individually, Barra enables investors to see their exposures to various factors of each particular market.

When you select the data item Asset Exposure, you must also choose a Factor Type parameter. 

**Example:** To view the asset exposure of GE in the US Long Term Equity Model or the US Short Term Equity Model, select one of the Factor Types under Data Item Parameters for which you would like to see GE’s exposure.

You can select from various applicable style factors such as momentum, size, value, etc., or select the appropriate industry factor. In the case of GE, you could select Consumer Durables, Heavy Electrical Equipment, or Media.

**Frequency (Parameter)**

Together, the freq (frequency), sdate (start date), and edate (end date) parameters return time series data. 

The freq parameter defines the frequency at which Thomson Reuters Spreadsheet Link returns data. 

Edate and sdate define a time period over which Thomson Reuters Spreadsheet Link returns data.

**Include Excluded Estimates (Parameter)**

The Include (or Show) Excluded Estimates parameter applies to Estimates data items at the detail level. Excluded estimates are those not included in the mean calculations. This parameter allows you to include or exclude these brokers in the output from a Detail Estimate array function.

By default, Thomson Reuters Spreadsheet Link includes excluded estimates (InclExcluded=True), but by using this parameter, you can specify whether or not they should be used in a Detail Estimates array function.

**Enumerations**

1 (true) - Includes excluded estimates in output

0 (false) - Excludes excluded estimates in output

**Include Stopped Estimates (Parameter)**

The Include (or Show) Stopped Estimates parameter applies to Estimates data items at the detail level. Stopped estimates are those contributed in the past by brokers that no longer cover the security in question. This parameter allows you to include or exclude these brokers in the output from a Detail Estimate array function.

By default, Thomson Reuters Spreadsheet Link does not include stopped estimates at the detail level (ShowStopped=False), but by using this parameter, you can specify whether or not to show or include stopped estimates.

**Enumerations**

1 (true) - Includes stopped estimates in output

0 (false) - Excludes stopped estimates in output

**Lag (Parameter)**

The Lag parameter takes the data items and the parameters you have applied and shows the results for n periods prior.

For example, if you are looking at the most recent three quarters of cost of goods sold, if you apply the Lag parameter with -3, Thomson Reuters Spreadsheet Link returns the fourth, fifth, and sixth prior quarters of cost of goods sold.

**Methodology (Parameter)**

The calendar methodology is a method of putting companies with different fiscal year ends on a similar basis.
• **InterimSum** sums the last four quarters or two semiannuals.

• **WeightedAnnual** methodology takes the annual periods and provides monthly weights to each annual period. For example, if you were looking for CY2008 data using weighted annual methodology for a company that has a December fiscal year end, its CY2008 value is the same as its FY2008 value. If you were looking for CY2008 data using weighted annual methodology for a company that has a June fiscal year end, the calendarized value would comprise half of FY2008 and half of FY2009.

• **WeightedAnnualBlend** methodology exists for only IBES data (but not IBES Detail). This uses the exact same logic as the weighted annual, but it mixes both actuals and estimates. If you were seeking CY2010 data, Thomson Reuters Spreadsheet Link would be unable to calculate it currently because 2010 has not yet ended. Thomson Reuters Spreadsheet Link could, however, take the FY0 Actual Value and the FY1 Mean to create a reasonable proxy for the CY2010 value.

• **Cumulative Interim Sum** methodology is for a calendar period or Last Twelve Months (LTM). It calculates a calendar period or LTM by adding the latest annual fiscal period to the sum of the interim periods to date for the next annual period, less the sum of the interim periods to date for the prior year. In other words, Fiscal Interim (stub) + Latest Fiscal Annual - Last Year’s Fiscal Interim (stub)

• **Interim Sum Blend** methodology is for interim data. For Last Twelve Months (LTM) and Calendar Year (CY), Interim Sum Blend method combines both actual and estimated data for future annual periods when available. For NTM, Thomson Reuters Spreadsheet Link sums the next 12 months of interim estimates. For example, Dell Inc, 2009 fiscal year ends on January 31, 2010, after the period end date. Until the last Interim period data is available, you can calculate the LTM data value for Quarter reporters as Actual Sales (Fi0) + Actual Sales (Fi-1) + Actual Sales (Fi-2) + Estimated Sale (Fi1). You can calculate LTM data value for Semi-Annual Trimester reporters as Actual Sales (Fi0) + Actual Sales (Fi-1) + Estimated Sales (Fi1). You can calculate the LTM data value for Semi-Annual reporters as Actual Sales (Fi0) + Estimated Sales (Fi1).

**Offset (Parameter)**

The Offset parameter allows you to choose which estimate to use in your calculation. To request the latest estimate, type `offset=0`.

To request previous estimates, set the value to -1 or any lower whole number.

**1-Day Sum (Parameter)**

The 1-Day Sum parameter applies to dividend-related data items. It controls whether the results combine multiple dividends (regular and special) paid on the same day into one combined number. When the parameter is set to True, Thomson Reuters Spreadsheet Link combines the multiple dividends. When set to False, Thomson Reuters Spreadsheet Link displays only the regular dividend.

**Output (Parameter)**

The Output parameter applies different properties to the data.
- **Value** - Data item value.
- **Date** - Report date of the data item or date the data was public.
- **CalcDate** - Date for which you requested data. (For example, you might request price for 12/31, but, if that is a Saturday, Thomson Reuters Spreadsheet Link returns the date of 12/30.)
- **Status**
- **Name** - Function code of the data item.
- **Description** - Data item's description as shown in the Data Item Information dialog.
- **Currency** - ISO currency of the data item.
- **PeriodEndDate** - Fiscal period end date (12/31 for IBM's FY0 data).
- **Footnote** - Footnote text from Thomson Reuters Spreadsheet Link for forward-looking estimates.
- **SegDesc** - The name of the segment.
- **SegOrder** - The order in which the company's filings reported the segment.

**Owner Filter (Parameter)**

The Owner Filter parameter controls the criteria by which Thomson Reuters Spreadsheet Link ranks the investors. This parameter works in conjunction with the Sort Direction (see "Sort Direction (Parameter)" on page 24) parameter, which determines whether Thomson Reuters Spreadsheet Link sorts the investors in ascending or descending order. If you do not explicitly define the Owner Filter parameter, the default value is Position (Pos).

Available values for Owner Views include the following:

- Value change (ValueChg)
- Value (Value)
- Pos Chg (PosChg)
- Pos (Pos)

**Owner Views (Parameter)**

The Owner Views parameter defines the investor type(s) included in the function result. If you do not explicitly define this parameter, the default value is all investor types.

Available investor types include the following:

- All Shareholders (AllShareholders)
- Firms (Firms)
- Funds (Funds)
- Firms & Funds (FirmFunds)
- Strategic Holders (StrategicHolders)

**Parent and Consolidated (Parameter)**

The ParCon parameter allows you to switch between parent data and consolidated data. Consolidated is the default. Parent data is usually valid for Japanese companies.

**Enumerations**

*Par* - Parent Data - Only the parent company is included (not subsidiaries).

*Con* - Consolidated Data - The consolidated entity data is included.
Parent and Consolidated Type (Parameter)

The ParCon Type parameter allows you to switch between parent data and consolidated data for Toyo Keizai Estimates and Financials.

It has three selections:
- Consolidated (Japan)
- Consolidated (SEC)
- Parent (Japan)

Period and Natural Period (Parameter)

The Period Parameter provides you with a span of time over which a data element’s metric is being measured (can be real periods or derived periods). A period is defined by an end date and a length of time.

For example, period CY0 ended on 12/31 of the previous calendar year and was a year in length. However, LTM (last 12 months), also a year in length, ended on a company's most recent fiscal quarter end date.

Natural Period has the same functionality as the Period parameter, except that it is limited to only fiscal periods.

Enumerations

<table>
<thead>
<tr>
<th>Description</th>
<th>Format</th>
<th>Range</th>
<th>Examples</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative Fiscal Year</td>
<td>FY[n]</td>
<td>-20 &lt; n &lt; 6</td>
<td>FY0 FY1 FY-1</td>
<td>Relative fiscal year based on the last reported fiscal year (FY0).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Alternatives: FY as alias for FY0, format Y[n] also supported</td>
</tr>
<tr>
<td>Relative Fiscal Quarter</td>
<td>FQ[n]</td>
<td>-200 &lt; n &lt; 9</td>
<td>FQ0 FQ1 FQ5</td>
<td>Relative fiscal quarter based on the last reported fiscal quarter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Alternatives: FQ as alias for FQ0, format Q[n] also supported</td>
</tr>
<tr>
<td>Relative Fiscal Year/Quarter</td>
<td>[q]QFY[n]</td>
<td>q in (1,2,3,4) and -20 &lt; n &lt; 6</td>
<td>1QFY1 2QFY-3</td>
<td>Relative fiscal quarter based on relative year.</td>
</tr>
<tr>
<td>Relative Calendar Year</td>
<td>CY[n]</td>
<td>-20 &lt; n &lt; 6</td>
<td>CY1 CY-5</td>
<td>Relative calendar year based on the last completed calendar year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(various methodologies).</td>
</tr>
<tr>
<td>Relative Calendar Quarter</td>
<td>CQ[n]</td>
<td>-200 &lt; n &lt; 9</td>
<td>CQ4 CQ-4</td>
<td>Relative calendar quarter based on the last completed calendar</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>quarter (various methodologies).</td>
</tr>
</tbody>
</table>
### Description | Format | Range | Examples | Definition
--- | --- | --- | --- | ---
Absolute Fiscal Year | `[YYYY]` | `1975 < YYYY < 2010` | `2004 2005 2007` | Fiscal year based on the year in which the fiscal year ends after 1 month roll-back. Alternative: `FY[YYYY]` (if no conflict with Relative Fiscal Year)
Absolute Fiscal Quarter | `[q]Q[YYYY]` | `q in (1,2,3,4) and 1975 < YYYY < 2010` | `1Q2006 2Q2004` | Fiscal quarter based on the year in which the fiscal year ends after 1 month roll-back.
Absolute Calendar Year | `CY[YYYY]` | `1975 < YYYY < 2010` | `CY2006 CY1999` | Calendar year (various methodologies)
Absolute Calendar Quarter | `[q]QCY[YYYY]` | `q in (1,2,3,4) and 1975 < YYYY < 2010` | `1QCY2006` | Calendar Quarter (various methodologies)
Relative Calendar Year/Quarter | `[q]QCY[n]` | `q in (1,2,3,4) and -20 < n < 6` | `3QCY1 1QCY-4` | Relative calendar quarter based on relative Calendar year (various methodologies).
Next 12 Months / 12 Mo. Rolling | `NTM` | - | `NTM` | Next 12 months relative to the month of the current date. Alternative: `FTM`
Last 12 Months / 12 Mo. Rolling | `LTM` | - | `LTM` | Next 12 months relative to the current date. Alternative: `TTM`

### Prev Window (Parameter)
You can set the Previous (Prev) Window parameter for Number of Estimates Raised and Lowered for Custom Consensus functions.

The number of estimates raised and lowered for custom consensus functions are based on the previous estimate to see whether the current estimate is up or down.

The previous window asks how many calendar days Thomson Reuters Spreadsheet Link should look back from the first estimate to find the previous estimate.

The Window parameter finds the first estimate within that number of days. From that number of days, Thomson Reuters Spreadsheet Link looks back for the next estimate using the Prev Window parameter.
The data items that use the Prev Window parameter are TF.ES.SALES.CustomNumEstsRsd() (SALES Custom Summary # of Estimates Raised) and TF.ES.SALES.CustomNumEstsLwd() (SALES Custom Summary # of Estimates Lowered) for all measures.

Reporting State (Parameter)

The Reporting State parameter provides allows you to change the type of financial report state you are looking to retrieve. For example, you can view the financial statement data item on a "restated" basis or an "originally reported" basis.

The restated reporting state shows the original value when a restated value is not available for a specific period.

Enumerations

- rstd - Restated Value - Data as of the original filing date
- orig - Originally Reported - Data as of the original filing date

Roll Periods (Parameter)

You can use the RollPeriods parameter when you request time series data for a relative period. The RollPeriods parameter determines whether the period of data being referred to changes as you move from your start to end date or whether it remains the same.

The default value is true, meaning that the period end date of the data returned depends on what data is available for the date requested.

When set to false, the period end date of the data you have retrieved is the same for all data points returned.

Enumerations

- 1 = True
- 0 = False

Scale (Parameter)

The Scale parameter allows you to set the format for the numeric values in your file.

The Scale default is None.

Enumerations

- Billions, or 9 digits
- Millions, or 6 digits
- Hundreds, or 3 digits
- None

Show Excluded Estimates (Parameter)

See Include Excluded Estimates (see "Include Excluded Estimates (Parameter)" on page 18).

Show Stopped Estimates (Parameter)

See Include Stopped Estimates (see "Include Stopped Estimates (Parameter)" on page 18).

Sort Date (Parameter)

The Sort Date parameter is for Ownership data items. It sorts lists of data from multiple periods in the same order, allowing you to compare data across periods more easily.
Sort Direction (Parameter)

The Sort Direction parameter determines the direction in which Thomson Reuters Spreadsheet Link sorts the function results, ascending or descending. This parameter works in conjunction with the Owner Filter (see “Owner Filter (Parameter)” on page 20) parameter, which determines by what content Thomson Reuters Spreadsheet Link sorts the output of the function. If you do not explicitly define the Sort Direction parameter, the default value is Bottom (D).

Available values for Sort Direction include the following:
- Top (A)
- Bottom (D)

Split Type (Parameter)

The Split Type parameter (SplitType) allows you to specify whether historical Pricing formulas should calculate prices as stock split-adjusted, stock split- and spin-off-adjusted, or unadjusted. By default, Split Type is set to Split Adjusted (SplitAdj).

Enumerations

- SplitSpinAdj - Stock split- and spin-off-adjusted
- SplitAdj - Stock split-adjusted
- Unadjusted - Unadjusted for stock splits or spin-offs

Start Date (Parameter)

Together, the sdate (start date), edate (end date), and freq (frequency) parameters are used to return time series data.

Sdate and edate define a time period over which data is returned. Each may be defined as either a relative or absolute date.

The frequency at which data is returned is defined by the freq parameter.

StartNum (Parameter)

The StartNum (Start Number) and EndNum (End Number) parameters are required of all data items that return a variable number of data points for a given date or date range. This includes detail estimate data items and data items containing "array" in their display name.

For detail-estimate data items

For detail-estimate data items, StartNum and EndNum indicate how many estimates to return per broker or analyst in chronological order for the period and date range specified.

For example, “0” indicates the current estimate for each broker or analyst, “1” or “-1” represents the previous estimate, “2” or “-2” represents the estimate before that, and so on. If you only want the current estimate for all brokers, or the specified broker, then set StartNum=0. If you want both the current estimate and the prior estimate for these same brokers, then you set StartNum=0 and EndNum=-1 or EndNum = 1. In this case, Thomson Reuters Spreadsheet Link returns the estimates in chronological order by announce date.

For data arrays

For data items with “array” in their display name, StartNum is set to 0 by default but may be any integer from 0 to the maximum number of data points available for the date or date range.

By default, Thomson Reuters Spreadsheet Link retrieves only a single data point. If more than one data point is available, you can retrieve multiple points by setting the EndNum to an integer value of -1 or less. If the EndNum is significantly less than the smallest index available, this will not affect your results. The purpose of these
parameters for “array” items is to prevent Thomson Reuters Spreadsheet Link from overwriting important data when your worksheet refreshes.

**For Ownership data items**

For Ownership data items for which you can set StartNum and EndNum, type -1 for only the StartNum or EndNum to retrieve the entire dataset up to 8000, the maximum amount allowed for owners.

Typing a positive number retrieves the relevant output rows and limits the results up to that row. For example, if you set StartNum to 0 and EndNum to 2, Thomson Reuters Spreadsheet Link retrieves the first three results (0, 1, and 2).

Typing a negative EndNum gives you all results from the StartNum that you typed. For example, if StartNum=10 and EndNum=-1, Thomson Reuters Spreadsheet Link retrieves all results starting from 10.

**TK Source Type (Parameter)**

The TK Source type allows you to select one of the following sources for a Toyo Keizai Financials data item:

- **Yuho Report**
- **Tanshin Report**
- **Yuho Quarterly with Tanshin for the latest flash update (the default)**

The reports cover few foreign companies listed within Japan and no foreign companies listed outside of Japan.

The contents of the Yuho report are as follows:

- All Japanese companies publicly listed in Japan
- Japanese companies that are delisted, but Toyo Keizai holds their data prior to their delisting
- Japanese companies that are not publicly listed in Japan but which Toyo Keizai chooses to cover
- All J-REITs listed in Japan

The contents of the Tanshin report are as follows:

- Japanese companies publicly listed in Japan
- Japanese companies that are delisted, but Toyo Keizai holds their data prior to their delisting
- All J-REITs listed in Japan

**Use Excluded Estimates (Parameter)**

The Use Excluded Estimates parameter (UseExcluded) applies to Custom Summary Estimates formulas. Excluded estimates are those considered by the content provider to not be up to date.

For example, IBES considers any estimate that has not been confirmed by the contributing broker within 105 days to be stale, thus it is excluded from the consensus estimate.

By default, Thomson Reuters Spreadsheet Link does not include excluded estimates (UseExcluded=False), but by using this parameter, you can specify whether or not they should be used in a Custom Summary Estimates formula.

**Enumerations**

- **True (or "1")** - Uses excluded estimates in calculation
- **False (or "0")** - Does not use excluded estimates in calculation

**Use Stopped Estimates (Parameter)**

The Use Stopped Estimates (UseStopped) parameter applies to Custom Summary Estimates formulas. Stopped estimates are those contributed in the past by brokers that no longer cover the security in question. By default,
Thomson Reuters Spreadsheet Link does not include stopped estimates in any consensus calculation (UseStopped=False), but by using this parameter, you can specify whether or not they should be used in a Custom Summary calculation.

**Enumerations**

1 (true) - Uses stopped estimates in calculation
0 (false) - Does not use stopped estimates in calculation

**Window Size (Parameter)**

WindowSize represents the number of calendar days to look back from the calculation date in order to locate estimates.

A value of -1 represents an infinite number of days, which means that Thomson Reuters Spreadsheet Link includes all estimates in the result.

**Parameter Definitions - Categorized List**

Not every parameter type is available in every category.

<table>
<thead>
<tr>
<th>Period Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Period (see &quot;Period and Natural Period (Parameter)&quot; on page 21)</td>
</tr>
<tr>
<td>Period (see &quot;Period and Natural Period (Parameter)&quot; on page 21)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time Series Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Date (see &quot;Start Date (Parameter)&quot; on page 24)</td>
</tr>
<tr>
<td>End Date (see &quot;End Date (Parameter)&quot; on page 17)</td>
</tr>
<tr>
<td>Frequency (see &quot;Frequency (Parameter)&quot; on page 18)</td>
</tr>
<tr>
<td>1-Day Sum (see &quot;1-Day Sum (Parameter)&quot; on page 19)</td>
</tr>
<tr>
<td>Window Size (see &quot;Window Size (Parameter)&quot; on page 26)</td>
</tr>
<tr>
<td>Prev Window (see &quot;Prev Window (Parameter)&quot; on page 22)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advanced Period Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Align Type (see &quot;Align Type (Parameter)&quot; on page 15)</td>
</tr>
<tr>
<td>Parameters</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Roll Periods</td>
</tr>
<tr>
<td>Reporting State Parameters</td>
</tr>
<tr>
<td>Positions Parameters</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Capital Adjustment Parameters</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Broker Detail Parameters</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Ownership Filters Parameters</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Factors Parameters</td>
</tr>
<tr>
<td>Content Filter Parameters</td>
</tr>
<tr>
<td>Section</td>
</tr>
<tr>
<td>---------------------------------</td>
</tr>
<tr>
<td>Include/Show Stopped Estimates</td>
</tr>
<tr>
<td>Use Excluded Estimates</td>
</tr>
<tr>
<td>Use Stopped Estimates</td>
</tr>
<tr>
<td><strong>Parent/Consolidated Parameters</strong></td>
</tr>
<tr>
<td>Parcon</td>
</tr>
<tr>
<td>Type</td>
</tr>
<tr>
<td><strong>Properties</strong></td>
</tr>
<tr>
<td>Output</td>
</tr>
<tr>
<td><strong>TK Source</strong></td>
</tr>
<tr>
<td>Type</td>
</tr>
<tr>
<td><strong>Settings</strong></td>
</tr>
<tr>
<td>Calendar</td>
</tr>
<tr>
<td>Currency</td>
</tr>
<tr>
<td>Lag</td>
</tr>
<tr>
<td>Methodology</td>
</tr>
<tr>
<td>Scale</td>
</tr>
<tr>
<td><strong>Options</strong></td>
</tr>
<tr>
<td>Data Direction</td>
</tr>
<tr>
<td>Clean-up</td>
</tr>
</tbody>
</table>
Chapter 5  Identifier Lookup

You can use the Identifier Lookup to look up a public and/or private company, an equity index, a foreign exchange (FX) rate, or an IBES Global Aggregate.

Look up a Company, Equity Index, or IBES Global Aggregate (Identifier Lookup)

In Thomson Reuters Spreadsheet Link, you can search for a public company by a number of keywords, depending on your entitlements:

- partial or full name
- ticker
- Thomson ticker
- Reuters Instrument Code (RIC)
- IBES ticker
- SEDOL with or without check digit
- CUSIP with or without check digit
- ISIN
- Perm ID
- Barra ID
- QA ID
- permanent ID
- Worldscope ID
- Reuters Report Number (RepNo)
- Datastream Code
- Datastream Mnemonic (More information in Datastream Country Identification Prefixes (on page 39))
- TKC

You can search for equity indexes and private companies by their partial or full names, and you can also look up IBES Global Aggregates.

After you search, you can export the results to a worksheet.

To look up a public and/or private company, index, or IBES Global Aggregate

1. On the Thomson Reuters menu, click Look up Companies & Identifiers.
2. From the Entity Type drop-down, select Public Companies, Private Companies, Public & Private Companies, Equity Indices, or IBES Global Aggregates.
3. If applicable, select an identifier type from the Keyword drop-down.
4. Select Starts With, Contains, or Is Exactly.
5. In the textbox, type all or part of the identifier you chose (for example: Micro, S&P, etc.).
6. To filter your search further, see Advanced Options for Looking up a Public Company (see "Advanced Options for Looking up a Public Company (Identifier Lookup)" on page 31), Advanced Options for Looking up a Private Company or Public and Private Companies (see "Advanced Options for Looking up a Private Company or Public and Private Companies (Identifier Lookup)" on page 32), Advanced Options for Looking up an Equity Index (see "Advanced Options for Looking up an Equity Index (Identifier Lookup)" on page 34), or Advanced Options for Looking up an IBES Global Aggregate (see "Advanced Options for Looking up IBES Global Aggregates (Identifier Lookup)" on page 35).
7. Click Show Results.
Chapter 5 Identifier Lookup

8. If applicable, click the arrows in the Search Results box to view security and quote level information.

9. To view more information in a pop-up, select a result, right-click and click Get Information.

10. Change the view of the results (see "Change the View of the Results (Identifier Lookup)" on page 38).

11. To export a company to a spreadsheet, select the company, and click Export (see "Customize Your Export (Identifier Lookup)" on page 38). To customize your export, see Customize Your Export (Identifier Lookup)" on page 38).

12. To start a new search, click New Search.

---

Look up Foreign Exchange Rates (Identifier Lookup)

In Thomson Reuters Spreadsheet Link you can search for the codes for historical and forecast foreign exchange (FX) rates and export them to a spreadsheet. You can search by exchange rate name (for example, US $), DS mnemonic, source currency, target currency, or base date.

You can use this information to convert financials at different rates to period-end rates. This information can help reflect income statement revenue received throughout a financial period. It can also offer insight into where the market believes FX rates to be in the future, thus giving a more accurate perception of future revenue flows.

**To look up foreign exchange (FX) rates**

1. On the Thomson Reuters menu, click Look up Companies & Identifiers.
2. From the Entity drop-down, select FX Rates.
3. From the Keyword drop-down, select Name, Datastream Mnemonic, Source Currency, Target Currency, or Base Date.
4. From the adjacent drop-down, select Starts with, Contains, or Is Exactly.
5. In the textbox, type all or part of the exchange rate name (for example, US, Japanese, euro, etc.) or the Datastream mnemonic.
6. To filter your search further, see Advanced Options for Looking up Foreign Exchange Rates (see "Advanced Options for Looking up Foreign Exchange Rates (Identifier Lookup)" on page 37).
7. Click Show Results.
8. To view more information in a pop-up, select an exchange rate, right-click and click Get Information.
9. Change the view of the results (see "Change the View of the Results (Identifier Lookup)" on page 38).
10. To export an exchange rate to a spreadsheet, select the exchange rate, and click Export (see "Customize Your Export (Identifier Lookup)" on page 38). To customize your export, see Customize your Export (see "Customize Your Export (Identifier Lookup)" on page 38).

11. To look up a different foreign exchange rate, click New Search.

Advanced Options for Looking up a Public Company (Identifier Lookup)

To look up a public company using advanced options
1. On the Thomson Reuters menu, click Look up Companies & Identifiers.
2. From the Entity Type drop-down, select Public Companies.
3. If applicable, select an identifier type from the Keyword drop-down.
4. Select Starts With, Contains, or Is Exactly.
5. In the textbox, type all or part of the identifier you chose (for example: Micro, S&P, etc.).
6. Click Advanced Options
7. To include or exclude at least one country of exchange in your search, next to Country of Exchange, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select a country. To select multiple countries, hold the CTRL key while clicking countries.
   c. Click
   d. Click OK.
8. To include or exclude at least one country of incorporation in your search, next to Country of Incorporation, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select a country. To select multiple countries, hold the CTRL key while clicking countries.
   c. Click
   d. Click OK.
9. To include or exclude an exchange in your search, next to Exchange, select Includes or Excludes.
a. Click the ellipsis (...).
b. From the left box, select an exchange. To select multiple exchanges, hold the CTRL key while clicking countries.
c. Click \( \rightarrow \rightarrow \) 
d. Click OK.

10. To search for active or inactive securities only, in the text box to the right of Security Status and Equals, click the ellipsis (...).
   a. Select Active or Inactive.
   b. Click OK.

You cannot select Thomson Ticker in the Keyword drop-down if you are searching for an inactive company.

11. Click Show Results.

12. To hide the Advanced Options and expand the Search Results area, click Advanced Options.

13. Change the view of the results (see "Change the View of the Results (Identifier Lookup)" on page 38).

14. If applicable, click the plus signs in the Search Results box to view security and quote level information.

15. To view more information in a pop-up, select a company, right-click and click Get Information.

16. To export an index to a spreadsheet, select it, and click Export (see "Customize Your Export (Identifier Lookup)" on page 38). To customize your export, see Customize Your Export (Identifier Lookup)" on page 38).

17. To look up a different index, click New Search.

---

**Advanced Options for Looking up a Private Company or Public and Private Companies (Identifier Lookup)**

You must have entitlements in order to see private company data. For information on your entitlements, contact your sales representative.

**To look up a private company or public and private companies using advanced options**

1. On the Thomson Reuters menu, click Look up Companies & Identifiers.
2. From the Entity Type drop-down, select Private Companies or Public and Private Companies.
To ensure that you can retrieve private company data (entitlements required)

1. On the Thomson Reuters menu or ribbon, click Options (on page 185).
2. Click Identifiers.
3. In the Order of Identifier Matching box, scroll down to select Gem Org Id.
4. Click Move Up so that Gem Org Id is not at the bottom of the list.
5. Click Apply.
6. Click OK.
7. Selects Starts With, Contains, or Is Exactly.
8. In the textbox, type all or part of the company name (for example, Micro or Best).
9. Click Advanced Options
10. To include or exclude at least one country of incorporation in your search, next to Country of Incorporation, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select a country. To select multiple countries, hold the CTRL key while clicking countries.
   c. Click >>
   d. Click OK.
11. To search for active or inactive securities only, in the text box to the right of Security Status and Equals, click the ellipsis (...).
   a. Select Active or Inactive.
   b. Click OK.
12. Click Show Results.
13. To hide the Advanced Options and expand the Search Results area, click Advanced Options.
14. Change the view of the results (see "Change the View of the Results (Identifier Lookup)" on page 38).
15. If applicable, click the plus signs in the Search Results box to view security and quote level information.
16. To view more information in a pop-up, select a company, right-click and click Get Information.
17. To export an index to a spreadsheet, select it, and click Export (see "Customize Your Export (Identifier Lookup)" on page 38). To customize your export, see Customize your Export (see "Customize Your Export (Identifier Lookup)" on page 38).
18. To look up a different index, click **New Search**.

![Identifier Lookup window](image)

**Advanced Options for Looking up an Equity Index (Identifier Lookup)**

To look up an equity index using advanced options

1. On the Thomson Reuters menu, click **Look up Companies & Identifiers**.
2. From the **Entity Type** drop-down, select **Equity Indices**.
3. If applicable, select an identifier type from the **Keyword** drop-down.
4. Select **Starts With**, **Contains**, or **Is Exactly**.
5. In the textbox, type all or part of the identifier you chose (for example: Micro, S&P, etc.).
6. Click **Advanced Options**.
7. To include or exclude at least one **country of exchange** in your search, next to **Country of Exchange**, select **Includes** or **Excludes**.
   a. Click the ellipsis (...).
   b. From the left box, select a country. To select multiple countries, hold the CTRL key while clicking countries.
   c. Click **>>**.
   d. Click OK.
8. To include an index family in your search, click the ellipsis (...) the the field next to **Index Family**.
   a. From the left box, select an index family. To select multiple index families, hold the CTRL key while clicking countries.
   b. Click OK.
9. Click **Show Results**.
10. To hide the Advanced Options and expand the Search Results area, click **Advanced Options**.
11. Change the view of the results (see “Change the View of the Results (Identifier Lookup)” on page 38).
12. To view more information in a pop-up, select an index, right-click and click **Get Information**.

13. To export an index to a spreadsheet, select it, and click **Export** (see “Customize Your Export (Identifier Lookup)” on page 38). To customize your export, see Customize your Export (see “Customize Your Export (Identifier Lookup)” on page 38).

14. To look up a different index, click **New Search**.

---

**Advanced Options for Looking up IBES Global Aggregates (Identifier Lookup)**

To look up IBES Global Aggregates using advanced options
1. On the Thomson Reuters menu, click **Look up Companies & Identifiers**.
2. From the **Entity Type** drop-down, select **IBES Global Aggregates**.
3. If applicable, select an identifier type from the **Keyword** drop-down.
4. Select **Starts With**, **Contains**, or **Is Exactly**.
5. In the textbox, type all or part of the identifier you chose (for example: Micro, S&P, etc.).
6. Click **Advanced Options**.
7. To include a **Base Date** in your search, click the ellipsis (…) in the field next to **Base Date**.
   a. From the calendar, select a date.
   b. Click **OK**.
8. To include or exclude at least one country in your search, next to **Country**, select **Includes** or **Excludes**.
   a. Click the ellipsis (…).
   b. From the left box, select a country. To select multiple countries, hold the CTRL key while clicking countries.
   c. Click **>>**
   d. Click **OK**.
9. To include or exclude at least one currency in your search, next to **Currency**, select **Includes** or **Excludes**.
   a. Click the ellipsis (…).
   b. From the left box, select a currency. To select multiple currencies, hold the CTRL key while clicking currencies.
c. Click ✤✤
d. Click OK.

10. To include or exclude at least one country of exchange in your search, next to Country of Exchange, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select a country. To select multiple countries, hold the CTRL key while clicking countries.
   c. Click ✤✤
   d. Click OK.

11. To include or exclude at least one country of incorporation in your search, next to Country of Incorporation, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select a country. To select multiple countries, hold the CTRL key while clicking countries.
   c. Click ✤✤
   d. Click OK.

12. To include or exclude an exchange in your search, next to Exchange, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select an exchange. To select multiple exchanges, hold the CTRL key while clicking countries.
   c. Click ✤✤
   d. Click OK.

13. To include or exclude an IBES Global Aggregate type in your search, next to IGA Type, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select an IGA type. To select multiple IGA types, hold the CTRL key while clicking IGA types.
   c. Click ✤✤

14. Click OK.

15. Click Show Results.

16. To view more information in a pop-up, select a company, right-click and click Get Information.

17. Change the view of the results (see “Change the View of the Results (Identifier Lookup)” on page 38).

18. To export a company to a spreadsheet, select the company, and click Export (see “Customize Your Export (Identifier Lookup)” on page 38). To customize your export, see Customize your Export (see “Customize Your Export (Identifier Lookup)” on page 38).
19. To look up a different company, click **New Search**.

### Advanced Options for Looking up Foreign Exchange Rates (Identifier Lookup)

To see the rate of exchange for one currency (for example, US dollar or USD) to all other currencies, you can set only the source currency or only the target currency to that currency and then run your search.

**To look up foreign exchange rates using advanced options**

1. On the Thomson Reuters menu, click **Look up Companies & Identifiers**.
2. From the **Entity** drop-down, select **FX Rates**.
3. From the **Keyword** drop-down, select **Name**, Datastream Mnemonic, **Source Currency**, **Target Currency**, or **TKC**.
4. Select **Starts with**, **Contains**, or **Is Exactly**.
5. In the textbox, type all or part of the exchange rate name (for example, US, Japanese, euro, etc.) or the Datastream mnemonic.
6. Click **Advanced Options**
7. To include a **Base Date** in your search, click the ellipsis (...) in the field next to **Base Date**.
   a. From the calendar, select a date.
   b. Click **OK**.
8. To include **Source Currency** in your search, click the ellipsis (...) in the field next to **Source Currency**.
   a. From the left box, select a currency.
   b. Click **Select**
   c. Click **OK**.
9. To include **Target Currency** in your search, click the ellipsis (...) in the field next to **Target Currency**.
   a. From the left box, select a currency.
   b. Click **Select**
   c. Click **OK**.
10. Click **Show Results**.
11. To view more information in a pop-up, select an exchange rate, right-click and click **Get Information**.
12. Change the view of the results (see "Change the View of the Results (Identifier Lookup)" on page 38).

13. To export an exchange rate to a spreadsheet, select the exchange rate, and click Export (see "Customize Your Export (Identifier Lookup)" on page 38). To customize your export, see Customize your Export (see "Customize Your Export (Identifier Lookup)" on page 38).

14. To look up a different foreign exchange rate, click New Search.

Change the View of the Results (Identifier Lookup)

To re-sort results alphabetically or reverse alphabetically
1. Click the column heading.
2. To reverse the order, click again.

To add or change the order of the columns
1. In the upper right corner of the Results area, click
2. Select or clear the columns to display, and click Move Up or Move Down to change the order of the columns.
3. Click OK.

Customize Your Export (Identifier Lookup)

You can customize your export and set your defaults for future exports to Excel. Export options differ by component.

To customize your export of a company, equity index, exchange rate, or IBES Global Aggregate to Excel
1. After searching for a company, equity index, exchange rate (see "Look up Foreign Exchange Rates (Identifier Lookup)" on page 30), or IBES Global Aggregate in the Search Results area, click the company or equity index that you would like to export.
2. Click on the Excel spreadsheet where you would like to export the company, identifier, index, or IBES Global Aggregate.
3. In the Identifier Lookup dialog, click the Export drop-down, and choose Export As.
4. Select Identifier type, Layout, and inclusion or exclusion of Headers.
5. Select if you would like to keep these settings as defaults when exporting data.
6. To view the options every time you export, select Always show these settings when exporting data.
7. Click OK to export the company, equity index, exchange rate, or IBES Global Aggregate to Excel.

**Datastream Country Identification Prefixes**

For all markets except the UK and Ireland, the first one or two characters plus a colon are a country identification prefix:

<table>
<thead>
<tr>
<th>Country</th>
<th>Prefix</th>
<th>Country</th>
<th>Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>AR:</td>
<td>Mexico</td>
<td>MX:</td>
</tr>
<tr>
<td>Australia</td>
<td>A:</td>
<td>Morocco</td>
<td>MC:</td>
</tr>
<tr>
<td>Austria</td>
<td>O:</td>
<td>Netherlands</td>
<td>H:</td>
</tr>
<tr>
<td>Belgium</td>
<td>B:</td>
<td>New Zealand</td>
<td>Z:</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>BN:</td>
<td>Norway</td>
<td>N:</td>
</tr>
<tr>
<td>Brazil</td>
<td>BR:</td>
<td>Pakistan</td>
<td>PK:</td>
</tr>
<tr>
<td>Canada</td>
<td>C:</td>
<td>Peru</td>
<td>PE:</td>
</tr>
<tr>
<td>Chile</td>
<td>CL:</td>
<td>Philippines</td>
<td>PH:</td>
</tr>
<tr>
<td>China</td>
<td>CN:</td>
<td>Poland</td>
<td>PO:</td>
</tr>
<tr>
<td>Columbia</td>
<td>CB:</td>
<td>Portugal</td>
<td>P:</td>
</tr>
<tr>
<td>Cyprus</td>
<td>CP:</td>
<td>Singapore</td>
<td>T:</td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>CZ:</td>
<td>South Africa</td>
<td>R:</td>
</tr>
<tr>
<td>Denmark</td>
<td>DK:</td>
<td>South Korea</td>
<td>KO:</td>
</tr>
<tr>
<td>Ecuador</td>
<td>ED:</td>
<td>Spain</td>
<td>E:</td>
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<tr>
<td>Finland</td>
<td>M:</td>
<td>Sri Lanka</td>
<td>SL:</td>
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<td>France</td>
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<td>Sweden</td>
<td>W:</td>
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<td>Country</td>
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</tr>
<tr>
<td>Germany</td>
<td>D:</td>
<td>Switzerland</td>
<td>S:</td>
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<tr>
<td>Greece</td>
<td>G:</td>
<td>Taiwan</td>
<td>TW:</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>K:</td>
<td>Thailand</td>
<td>Q:</td>
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<tr>
<td>Hungary</td>
<td>HN:</td>
<td>Turkey</td>
<td>TK:</td>
</tr>
<tr>
<td>India</td>
<td>IN:</td>
<td>United Kingdom</td>
<td>no prefix</td>
</tr>
<tr>
<td>Indonesia</td>
<td>ID:</td>
<td>United States</td>
<td>U: or @</td>
</tr>
<tr>
<td>Ireland</td>
<td>no prefix</td>
<td>Venezuela</td>
<td>V:</td>
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<td>Zimbabwe</td>
<td>ZI:</td>
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<tr>
<td>Japan</td>
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<td>Kenya</td>
<td>KN:</td>
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<tr>
<td>Malaysia</td>
<td>L:</td>
<td></td>
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</tr>
</tbody>
</table>
Chapter 6  Aggregate Builder

You can create an aggregate based on any specified group of identifiers and calculate data items or expressions for that aggregate. This allows you to track groups of securities over time and compare individual securities to peer groups of your choice. You can save custom aggregates for later use.

The only entity you can use to build aggregates is a company. The Entity drop-down displays this entity type, and you cannot change it.

Create a Custom Aggregate (Aggregate Builder)

To create a custom aggregate of time series data

1. On the Thomson Reuters menu (Excel 2003), point to Build, and click Build an Aggregate. On the Thomson Reuters tab (Excel 2007 or 2010), click Aggregate in the Build group.

2. In the Aggregate Set area, select the Create Aggregate option button.

3. Specify the identifiers (see "Specify Identifiers (Aggregate Builder)" on page 42) to include in your aggregate.

4. Select a weighting method (see "Weighting Methods (Aggregate Builder)" on page 42).

5. Select or type the null tolerance (0-100) for the aggregate upon export. The null tolerance that you set here applies to the aggregate as a whole and overrides the null tolerance global default that you set in Options (see "Change Null Tolerance Defaults (Options)" on page 185).

6. To add a data item or build an expression for your aggregate set, click in the Item Set area, and click Select Data Item (see "Select Data Item (Aggregate Builder)" on page 42) or Add Expression (see "Expression Builder" on page 53).

7. Select an aggregate type (see "Aggregate Types (Aggregate Builder)" on page 44) and, if necessary, type or look up a single identifier (see "Look Up Identifiers" on page 122), and/or type or select value (0 - 9,999) to which you would like your index to rebase.

8. To save the aggregate, click . Thomson Reuters Spreadsheet Link does not save the expression, data item, or aggregate type with the aggregate.

9. To export the results to a spreadsheet, click Export. To customize the export, see Customize Your Export (see "Customize Your Export (Aggregate Builder)" on page 44).
Specify Identifiers (Aggregate Builder)

To include a list of known identifiers in your aggregate
- Type the symbols, separated by a comma, in the Identifier(s) box.

To look up identifiers to include in your aggregate
- Click and click Select an Identifier (see "Look Up Identifiers" on page 122).

To include a saved index, watch list, or portfolio in your aggregate
- Click and click Import Saved List (see "Import a List" on page 122).

To include a saved screen in your aggregate
- Click and click Import Saved Screen (see "Import a Saved Screen" on page 122).

Select Data Item (Aggregate Builder)

To select a data item to add to your aggregate
1. From the Category area, click the arrow next to a category in the expandable tree.
2. To filter the list of data items in the Item area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
3. In the Item area, click a data item.
4. To set the parameters for the data item in the Parameters tab of the panel on the right, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
5. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
6. Click OK.

Weighting Methods (Aggregate Builder)

- Equal Share weights all of the stocks equally. It is also known as “equal-weighted.”
- Equal Dollar is a derived methodology designed so that all of the stocks exert an equal influence on the index level.
- Market Capitalization is the weighted average of all the stocks in the index weighted by market cap.
- Portfolio Shares is the weighted average of all the stocks in a portfolio weighted by portfolio shares held. Portfolio Shares is valid only on portfolios.
- Shares Outstanding is the weighted average of all the stocks in the index weighted by shares outstanding.

Save a Custom Aggregate (Aggregate Builder)

You can save a custom aggregate with a name and a description.

Thomson Reuters Spreadsheet Link saves your selections for identifiers, weighting method, and null tolerance with the aggregate. Thomson Reuters Spreadsheet Link does not save your selections for expression, data item, or aggregate type with the aggregate.

If you open a saved aggregate and make changes to it, you can save it as a new aggregate by clicking Save As or override the previous version of the aggregate by clicking Save.
To save a custom aggregate

1. After creating a custom aggregate, click [Save]. To create a separate aggregate from a saved aggregate that you have opened and edited (see "Open a Saved Aggregate (Aggregate Builder)" on page 43), click [Save As…].

2. In the Save Aggregate dialog, type a name for your custom aggregate. When you export the aggregate to a spreadsheet, you can opt to export this name to the spreadsheet.

3. To include a description for the aggregate, type it in the Description box.

4. Select a location for the aggregate, or click New Folder, type a name for the new folder, and click OK.

5. Select a security level for the aggregate.

6. Click Save.

Open a Saved Aggregate (Aggregate Builder)

To open a saved aggregate

1. In Aggregate Builder, click [Open…].

2. Click the arrow next to the folder(s) with the aggregate type.

3. Click the aggregate.

4. Click OK.

5. To make changes, see Create a Custom Aggregate.

6. To overwrite the saved aggregate with changes, click [Save]. To save the changed aggregate as a separate aggregate, click [Save As…]. For more information, see Save a Custom Aggregate.

Reference a Cell (Aggregate Builder)

In Aggregate Builder, you can reference a cell containing an aggregate symbol set, whether you have saved it or not, but you cannot reference the cell of a saved portfolio, watch list, index, or screen.

When you reference a cell with a saved aggregate set, you cannot make changes to that aggregate. To make changes to a saved aggregate, open (see “Open a Saved Aggregate (Aggregate Builder)” on page 43) it from the Aggregate Builder, edit it, and then save (see “Save a Custom Aggregate (Aggregate Builder)” on page 42) it.

For example, you can open a saved aggregate (see "Open a Saved Aggregate (Aggregate Builder)" on page 43), export it (see "Customize Your Export (Aggregate Builder)" on page 44) to your spreadsheet, and reference the cell that contains the aggregate. Once you reference that cell, you can apply a different data item, expression, and/or aggregate type and related selections to the saved aggregate.

To reference a cell

1. Select Reference a Cell.

2. On the spreadsheet, click the cell with the aggregate that you want to reference.

   The starting cell appears in the text box of the cell reference dialog.

3. In the cell reference dialog, click .

4. To apply a data item or expression, see Create a Custom Aggregate (see "Customize Your Export (Aggregate Builder)" on page 44).
Customize Your Export (Aggregate Builder)

You can customize your export and set your defaults for future exports to Excel. Export options differ by component.

To customize your export of aggregates to Excel
1. After creating an aggregate, click on the Excel spreadsheet where you would like to export your data.
2. Click the Export drop-down, and choose Export As.
3. Select an Aggregate Set, Calculation Type, Layout, Output, Headers, and Clean-up criteria from the appropriate drop-downs.
4. To keep these settings as a default when exporting data, select Keep these settings when exporting data.
5. To view the options every time you export, select Always show these settings when exporting data.
6. To export the data item to Excel, click OK.

Aggregate Types (Aggregate Builder)

When you apply an aggregate type, Thomson Reuters Spreadsheet Link applies the appropriate analytical function to base a time series array of data to a specific value, show it as a percent change, and/or set a relative base identifier.

<table>
<thead>
<tr>
<th>Aggregate Type</th>
<th>Analytical function that Thomson Reuters Spreadsheet Link applies to the data item or expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Values</td>
<td>Applies no analytical function to data item or expression, so data appears in its raw form.</td>
</tr>
<tr>
<td>Percent Change</td>
<td>Applies the INDEXTD (see &quot;INDEXTD (Relative &amp; Value Functions)&quot; on page 95) function to the data item or expression.</td>
</tr>
<tr>
<td>Rebase Values</td>
<td>Applies the INDEX (see &quot;INDEX (Relative &amp; Value Functions)&quot; on page 95) function to the data item or expression. 100 is the default value. You can type or select any value between 0 and 9999.</td>
</tr>
<tr>
<td>Relative Percent Change</td>
<td>Applies the RELTD (see &quot;RELTD (Relative &amp; Value Functions)&quot; on page 96) function to the data item or expression. You can type or select a relative identifier from Identifier Lookup. (see &quot;Look Up Identifiers&quot; on page 122)</td>
</tr>
<tr>
<td>Relative Rebase Values</td>
<td>Applies the INDEX (see &quot;INDEX (Relative &amp; Value Functions)&quot; on page 95) and RELTD (see &quot;RELTD (Relative &amp; Value Functions)&quot; on page 96) functions to the data item or expression. 100 is the default rebase value. You can type or select any value between 0 and 9999. Additionally, RELTD is nested within the index function. You can type or select a relative identifier from Identifier Lookup (see &quot;Look Up Identifiers&quot; on page 122).</td>
</tr>
</tbody>
</table>
Chapter 7  Chart Builder

Chart Builder allows you to easily bring together Thomson Reuters data while leveraging the best of Excel’s charting capabilities in order to create quick and attractive charts. Select from a number of pre-defined charts or create your own charts for use in your templates or reports.

Create a Single Equity Price Chart (Chart Builder)

A single equity price chart always presents the closing price activity of a security over a period of time. You can format single-security price charts as a candle stick, hi-lo close, or line chart. Different chart formats display different kinds of information. You can also view data for every price chart in numerical table format. After you export a chart, you can further customize its display by applying all of Excel’s powerful chart modifying tools.

To create a price chart
1. On the Thomson Reuters menu, point to Build and click Build a Chart.
2. From the drop-down, select an entity type.
   The entity type you select determines the availability of each kind of chart.
3. In the Identifiers box, type a single identifier, or, to search for a company (see “Look up a Company (Identifier Lookup)” on page 13), click the Look Up icon.
4. From the Category drop-down, select Price.
5. Select a chart type from the Types icons.
   - Candle Stick Chart
   - Hi-Lo Close Chart
   - Line Chart
6. Click Data Items to view and, if possible, make data item selections.
   • You cannot change data items for a Candle Stick chart.
   • For a Hi-Lo Close chart, the daily high, low and closing prices are selected by default, but you can remove the daily volume by clearing the option button and you can add one data item (see “Make Data Item Selections (Chart Builder)” on page 49) by selecting the Add option button.
   • For a Line chart, closing price is selected by default, but you can remove daily volume by clearing the TF.PR.VolumeDaily check box.
7. To reset the relative time frame, change the title of the chart, add labels to the x, y or 2nd y axes, or remove the legend, click Time Frame & Labels.
8. To select a different color scheme for your chart, click an icon.
9. To view the changes to your chart, click Update Chart.
10. To export the chart and its numeric data table to Excel, click Export. For more information on how to customize the export, see Customize Your Export (on page 52).
11. To close the Chart Builder window, click **Close**.

Create a Multiple Equity Price Chart (Chart Builder)

A multiple equity price chart presents the closing price activity of multiple securities over a period of time. Multiple price charts appear as line charts only, without volume. You can also view data for every price chart in a numerical table format. Once you have exported a chart, you can further customize its display by applying all of Excel's powerful chart modifying tools.

**To create a multiple equity price chart**

1. On the Thomson Reuters menu, point to **Build** and click **Build a Chart**.
2. From the drop-down, select an entity type. The entity type you select determines the availability of each kind of chart.
3. In the **Identifiers** box, type two to seven **identifiers**, separating each by a space, or, to search for a company (see "Identifier Lookup" on page 29), click the **Look Up** icon.
4. From the **Category** drop-down, select **Price**.
5. To reset the relative time frame, change the title of the chart, add labels to the x and y axes, or remove the legend, click **Time Frame & Labels**.
6. To select a different color scheme for your chart, click an icon.
7. To view the changes to your chart, click **Update Chart**.
8. To export the chart and its numeric data table to Excel, click **Export**. For more information on how to customize the export, see **Customize Your Export** (on page 52).
9. To close the Chart Builder window, click Close.

Create a Custom Chart (Chart Builder)

A custom chart allows you to access and visually display data for use in further financial valuation of a company. You can choose to format single security custom charts as line or bar graph charts. Multiple custom charts appear as line charts only. You can also view data for every custom chart in a numerical table format. After you export a chart to your spreadsheet, you can further customize its display by applying all of Excel's powerful chart modifying tools.

To create a custom chart
1. On the Thomson Reuters menu, point to Build and click Build a Chart.
2. From the drop-down, select an entity type.
   The entity type you select determines the availability of each kind of chart.
3. In the Identifiers box, type one or more identifiers (up to seven) separating each with a space, or, to search for a company (see "Identifier Lookup" on page 29), click the Look Up icon.
4. From the Category drop-down, select Custom.
5. From the Types icons, select a chart type. If you enter multiple identifiers, only the Line Chart icon appears. For a single identifier, select from the following types:
   - Line Chart (the default)
   - Bar Graph Chart
6. To select a data item for FX Rates, click Data Items, and select a data item.
   To choose custom chart data items (see "Make Data Item Selections (Chart Builder)" on page 49) for other entity types, click Data Items and then Add.
   With multiple identifiers, you can add only one data item.
You can assign an axis to each data item from the associated drop-down.

7. To reset the relative time frame, change the frequency or title of the chart, add labels to the x and y axes, or remove the legend, click **Time Frame & Labels**.

8. To select a different color scheme for your chart, click **Update Chart**.

9. To view the changes to your chart, click **Update Chart**.

10. To export the chart and its numeric data table to Excel, click **Export**. For more information on how to customize the export, see Customize Your Export (on page 52).

11. To close the Chart Builder window, click **Close**.

Make Data Item Selections (Chart Builder)

**To select data items**

1. To add data items, in the **Data Items** area, click the **Add** button.

2. From the **Category** area, click the arrow next to a category in the expandable tree.

3. To filter the list of data items in the **Item** area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).

4. In the **Item** area, click a data item.

5. To set the parameters for the data item in the **Parameters** tab of the panel on the right, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).

6. To view detailed information about the data item, use the Information Viewer (see "Learn More about a Data Item (Data Item Lookup)" on page 8).

7. Click **Add**.

**Create a Total Return Chart (Chart Builder)**

A total return chart presents the actual rate of return for a stock over a period of time that includes the reinvestment of dividends. Chart Builder displays single and multiple securities in a line chart. You can also view
data for every total return chart in a numerical table format. Once you export a chart, you can further customize a chart's display by applying all of Excel's powerful chart modifying tools.

To create a total return chart
1. On the Thomson Reuters menu, point to Build and click Build a Chart.
2. From the drop-down, select an entity type. The entity type you select determines the availability of each kind of chart.
3. In the Identifiers box, type one or more identifiers (up to seven) separating each with a space, or, to search for a company (see "Identifier Lookup" on page 29), click the Look Up icon.
4. From the Category drop-down, select Total Return.
5. To reset the relative time frame, change the title of the chart, add labels to the x and y axes, or remove the legend, click Time Frame & Labels.
6. To select a different color scheme for your chart, click an icon.
7. To view the changes to your chart, click Update Chart.
8. To export the chart and its numeric data table to Excel, click Export. For more information on how to customize the export, see Customize Your Export (on page 52).
9. To close the Chart Builder window, click Close.

Create a Shares Traded Analysis Chart (Chart Builder)

A shares traded analysis chart presents an analytical breakdown of where daily closing prices fell within the range of high and low closing prices over a period of time. This is not a sequential display, but one that shows the allocation of closing prices within a given range.

For example, if in the last 60 days, shares of a company (for example, MSFT) traded between a high of $31.10 to a low of $26.40, the price range would be $4.70. A shares traded analysis chart would show you in a bar graph format where, within this range, the closing prices occurred. If you choose to display all the closing prices in five
bins (equal segments), you might find that for 48% of the days, closing prices occurred in the high end of the range within the $30.40 to $31.10 sector.

A shares traded analysis chart contains a bar graph breakdown of the price range and, optionally, a cumulative percentage of volume line. You can also view data for every shares traded analysis chart in a numerical table format. After you export a chart, you can customize its display by applying all of Excel's powerful chart modifying tools.

To create a shares traded analysis chart
1. On the Thomson Reuters menu, point to Build and click Build a Chart.
2. From the drop-down, select an entity type.
   The entity type you select determines the availability of each kind of chart.
3. In the Identifiers box, type an identifier, or, to search for a company (see "Identifier Lookup" on page 29), click the Look Up icon.
4. From the Category drop-down, select Shares Traded Analysis.
5. In the Data Items area, select the number of bins you want, from 3 to 10.
6. To remove the cumulative volume line, clear the TF.PR VolumeDaily and TF.PR VolumeCumulative check boxes.
7. To reset the relative time frame, change the title of the chart, add labels to the x and y axes, or remove the legend, click Time Frame & Labels.
8. To select a different color scheme for your chart, click an icon.
9. To view the changes to your chart, click Update Chart.
10. To export the chart and its numeric data table to Excel, click Export. For more information on how to customize the export, see Customize Your Export (on page 52).
11. To close the Chart Builder window, click Close.
View Chart Numeric Table Data (Chart Builder)

You can view the data in a table or a chart or toggle between the two, using the icons.

To view chart data in a numerical table

1. Click the Data icon in the View area.

To view the data as a chart

1. Click the Chart icon.

Customize Your Export

You can customize your export and defaults for future exports to Excel.

To customize the export

1. After building and generating a chart, click the cell in the Excel spreadsheet where you would like to export your chart.
2. Click the Export drop-down, and choose Export As.
3. In the Calculation Type drop-down, select a method of calculation.
4. In the Data Location drop-down, select a destination for your chart's numeric table.
5. In the Chart Location drop-down, select a destination for your chart.
6. In the Clean-Up drop-down, select if you would like to overwrite previously exported data.
7. Select if you would like to keep these settings as defaults when exporting future charts.
8. To view the options every time you export, select Always show these settings when exporting data.
9. To export to Excel, click OK.
Chapter 8  Expression Builder

Expression Builder is a tool that lets you combine Thomson Reuters data items with analytical functions to create custom expressions.

For example, you can create a statistical function by applying an analytical function to a time series data array or create a custom data item by combining multiple data items.

Build an Expression Starting with Data Items (Expression Builder)

As you select or type expressions, they appear in the Expression box. When you select functions, select parameters and add them to an expression. When you select data items, the syntax appears and updates in the Formula bar below the Data Items and Functions tabs. You cannot change functions in the Formula bar. You must change functions in the Expression box.

To build an expression starting with data items
1. On the Thomson Reuters menu, point to Build and click Build an Expression.
2. From the drop-down, select an entity type.
3. Type, search for (see "Look Up Identifiers" on page 122), or reference a cell (see "Reference a Cell (Report Builder)" on page 121) with an identifier.
4. Click the Data Items tab.
5. Locate a data item by name (see "Search for a Data Item by Name (Expression Builder)" on page 54) or category (see "Browse for a Data Item by Category (Expression Builder)" on page 55).
6. To set a parameter for the data item, see Set Parameters for Data Items (see "Set Parameters for Data Items (Expression Builder)" on page 55).
7. To add a data item to the end of an expression,
   a. Choose the data item you want to add to the expression.
   b. In the Add to Expression drop-down, click Add to Expression (End of Expression).
8. To add a data item at the location of the cursor in the Expression box,
   a. Choose the data item you want to add to the expression.
   b. Place your cursor in the location within the Expression box that you want the data item to appear.
   c. Click the Add to Expression drop-down, and then click Add at cursor.
9. Add an operator (see "Mathematical Operators" on page 112) to the expression.
10. To add additional data items to the expression, repeat steps 3 through 5.
11. To apply a function to the data item, locate the function by category (see "Browse for Functions by Category (Expression Builder)" on page 58) or keyword (see "Search for Functions by Keyword (Expression Builder)" on page 57).
12. Add the function to the expression at the location of the cursor (see "Add a Function at the Cursor (Expression Builder)" on page 55), at the end of an expression (see "Add a Function to the End of an Expression (Expression Builder)" on page 55), around an entire expression (see "Add a Function Around an Expression (Expression Builder)" on page 55), or around a selected part of an expression (see "Add a Function Around a Selected Part of an Expression (Expression Builder)" on page 55).
13. To check the expression syntax, see Expression Area (see "Expression Area (Expression Builder)" on page 62).
14. To evaluate the expression, see Expression Area (see "Expression Area (Expression Builder)" on page 62).
15. To export the expression to Excel, click Export. To customize the export, see Customize Your Export (see "Customize Your Export (Expression Builder)" on page 63).
16. To clear the Expression box to create a new expression, click New.

Search for a Data Item by Name (Expression Builder)

To search for a data item by name
1. In the Item box, type a full or partial data item name.
2. In the Category area, click a category that has a positive number of results in parentheses.
3. To filter the list of data items in the Item area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
4. In the Item area, select a data item.
5. To set the parameters for the data item, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
6. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
7. Add the data item to the end of an expression (see "Add a Data Item to the End of an Expression (Expression Builder)" on page 54) or at the location of the cursor in the Expression box (see "Add a Data Item at the Cursor (Expression Builder)" on page 54).

Add a Data Item to the End of an Expression (Expression Builder)

To add a data item to the end of an expression
1. Choose the data item you want to add to the expression.
2. In the Add to Expression drop-down, click Add to Expression (End of Expression).

Add a Data Item at the Cursor (Expression Builder)

To add a data item to a desired part of the expression
1. Choose the data item you want to add to the expression.
2. Place your cursor in the location within the Expression box that you want the data item to appear.
3. Click the Add to Expression drop-down, and then click Add at cursor.

**Add a Function to the End of an Expression (Expression Builder)**

To add a function to the end of an expression

1. Choose the function you want to add to the expression by browsing by category (see "Browse for Functions by Category (Expression Builder)" on page 58) or searching by keyword (see "Search for Functions by Keyword (Expression Builder)" on page 57).
2. In the Add to Expression drop-down, click Add to Expression (End of Expression).

**Add a Function Around a Selected Part of an Expression (Expression Builder)**

To add a function to a selected part of an expression

1. Choose the function you want to add to the expression by browsing by category (see "Browse for Functions by Category (Expression Builder)" on page 58) or searching by keyword (see "Search for Functions by Keyword (Expression Builder)" on page 57).
2. Highlight the part of the expression that you want to surround with the function.
3. In the Add to Expression drop-down, click Add to Expression (Surround Selected).

**Add a Function Around an Expression (Expression Builder)**

To surround an expression with a function

1. Choose the function you want to surround the entire expression by browsing by category (see "Browse for Functions by Category (Expression Builder)" on page 58) or searching by keyword (see "Search for Functions by Keyword (Expression Builder)" on page 57).
2. In the Add to Expression drop-down, click Add to Expression (Surround Expression).

**Browse for a Data Item by Category (Expression Builder)**

To browse for a data item

1. From the Category area, click the arrow next to a category in the expandable tree.
2. To filter the list of data items in the Item area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
3. In the Item area, click a data item.
4. To set the parameters for the data item in the Parameters tab of the panel on the right, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
5. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
6. In the Data Items area, click a data item.
7. Add the data item to the end of an expression (see "Add a Data Item to the End of an Expression (Expression Builder)" on page 54) or at the location of the cursor in the Expression box (see "Add a Data Item at the Cursor (Expression Builder)" on page 54).

**Add a Function at the Cursor (Expression Builder)**

To add a function at the cursor

1. Place your cursor in the location you want the function to appear.
2. Click Add to Expression.

**Set Parameters for Data Items (Expression Builder)**

You can set the parameters for any data item. Parameters with an asterisk denote required information.
All parameters are grouped into Basic Parameters, Advanced Parameters, and Settings and vary according to data item category.

For example, data items in the Descriptive Information category have different parameters from data items in the Financials category. In addition, data items within specific categories may have different parameters. For example, in the Corporate Actions category, the Current Expected Annual Dividend and Split Factor data items have some different parameters. To view a complete list of parameters, see the parameters list (see "Parameter Definitions - Alphabetical List" on page 15).

Basic parameters are those that are required or commonly used.

As you select data items, the Data Item Lookup displays the appropriate function code in the Formula Bar at the bottom of the Data Item Selector area. If you are familiar with the function code syntax, you can manually edit it in the formula bar (see "Formula Bar (Data Item Lookup)" on page 10).

To set parameters for a data item
1. After locating a data item by category (see "Browse for a Data Item by Category (Expression Builder)" on page 55) or name (see "Search for a Data Item by Name (Expression Builder)" on page 54), scroll down and/or click in the Parameters tab of the panel on the right, to display all parameters.
2. To set parameters for a data item, click the drop-down next to any of the settings. An asterisk denotes required information.
3. To set the date parameter, see Select a Date (see "Select a Date (Data Item Lookup)" on page 9).
4. To view detailed information about the data item, use the Information Viewer (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
5. Add the data item to the end of an expression (see "Add a Data Item to the End of an Expression (Expression Builder)" on page 54) or at the location of the cursor in the Expression box (see "Add a Data Item at the Cursor (Expression Builder)" on page 54).

Build an Expression Starting with Analytical Functions (Expression Builder)

As you select or type expressions, they appear in the Expression box. When you select functions, select parameters and add them to an expression. When you select data items, the syntax appears and updates in the Formula bar below the Data Items and Functions tabs. You cannot change functions in the Formula bar. You must change functions in the Expression box.

1. On the Thomson Reuters menu, point to Build and click Build an Expression.
2. Click the Functions tab.
3. Locate a function by category (see "Browse for Functions by Category (Expression Builder)" on page 58) or keyword (see "Search for Functions by Keyword (Expression Builder)" on page 57).
4. To set a parameter for the function,
   a. In the Parameters tab of the panel on the right, next to the value you want to define, type a value, or click , click Select Data Item, select the data item (see "Data Item Lookup" on page 7), and click OK.
   b. Click Add to Expression.
5. Add the function to the expression at the location of the cursor (see "Add a Function at the Cursor (Expression Builder)" on page 55), at the end of an expression (see "Add a Function to the End of an Expression (Expression Builder)" on page 55), around an entire expression (see "Add a Function Around an Expression (Expression Builder)" on page 55), or around a selected part of an expression (see "Add a Function Around a Selected Part of an Expression (Expression Builder)" on page 55).
6. Add an operator to the expression.
7. To add a data item to the end of an expression,
   a. Choose the data item you want to add to the expression.
   b. In the Add to Expression drop-down, click Add to Expression (End of Expression). For more information, see Building an Expression starting with Data Items.
8. To add a data item at the location of the cursor in the Expression box,
   a. Choose the data item you want to add to the expression.
   b. Place your cursor in the location within the Expression box that you want the data item to appear.
   c. Click the Add to Expression drop-down, and then click Add at cursor. For more information, see Build an Expression starting with Data Items (see "Build an Expression Starting with Data Items (Expression Builder)" on page 53).

9. To add additional functions or data items to the expression, repeat steps 3 through 8.
10. To check the syntax of the expression, see Expression Area (see "Expression Area (Expression Builder)" on page 62).
11. To evaluate the expression, see Expression Area (see "Expression Area (Expression Builder)" on page 62).

Set a Parameter for a Function (Expression Builder)

You have several options for setting parameters, depending on the parameters you choose. Your options may include selecting parameters from a list, selecting data items from a Data Item Lookup dialog box, or manually typing parameters or data items into the Expression box. To set a parameter by entering a parameter or data item in the Expression box, you must know the correct formula for that parameter.

An asterisk denotes a required parameter.

To set a parameter
1. In the Functions tab, locate a function by browsing by category (see "Browse for Functions by Category (Expression Builder)" on page 58) or searching by keyword (see "Search for Functions by Keyword (Expression Builder)" on page 57).

2. In the Function Parameters panel, in the Values block, click the drop-down beside the value you want to define.
3. Click Select Parameter.
4. In the Select Parameter Value box, click one of the Available Values.
5. Click OK.

Modify Parameters using Hyperlinks (Expression Builder)

You can modify the parameters you assign to a function with the Hyperlink Variables option. This option applies hyperlinks to parameters. These hyperlinks enable you to click the parameters and modify them by adding data items and functions.

To modify parameters using hyperlinks
1. In the Expression box, in the Options drop-down, click Hyperlink Variables.
2. Click the parameter you want to modify.
3. Click Add Data Item or Add Function.
4. In the Data Item Lookup box, locate a data item by category (see "Browse for a Data Item by Category (Expression Builder)" on page 55) or name (see "Search for a Data Item by Name (Expression Builder)" on page 54), or in the Analytic Lookup box, choose a function by browsing by category (see "Browse for Functions by Category (Expression Builder)" on page 58) or searching by keyword (see "Search for Functions by Keyword (Expression Builder)" on page 57).
5. Click OK.

Search for Functions by Keyword (Expression Builder)

You can search for a function by keyword, whether you know the complete name of the function or only the first few letters of the name.
To search, you simply begin typing any part of the name of a function. As you type, the filter tool produces a list of functions that closely match the name of the function you are typing. From that list, you can select the function you want.

**To search for a function by keyword**

1. In the **Functions** tab in the **Item** box, begin typing any part of the name of a function.
2. To view the name of each result, click the **Name View** icon in the **Item** area.
3. To view the codes for each result, click the **Code View** icon in the **Item** area.
4. Select a function from the list of results in the **Item** area.
5. To set the parameters for the function, see Set a Parameter for a Function (see “Set a Parameter for a Function (Expression Builder)” on page 57).
6. To view detailed information about the a data item, right-click the data item, select **Get Information**, scroll to view information, and click **Close**.
7. Click **Add to Expression**.
8. To export the expression to an Excel spreadsheet, click **Export**. To customize your export, see Customize Your Export (see “Customize Your Export (Expression Builder)” on page 63).
9. Add the function to the expression at the location of the cursor (see "Add a Function at the Cursor (Expression Builder)" on page 55), at the end of an expression (see "Add a Function to the End of an Expression (Expression Builder)" on page 55), around an entire expression (see "Add a Function Around an Expression (Expression Builder)" on page 55), or around a selected part of an expression (see "Add a Function Around a Selected Part of an Expression (Expression Builder)" on page 55).

**Browse for Functions by Category (Expression Builder)**

Expression Builder organizes functions by category and allows you to browse the categories to search for functions.

**To select a function by browsing categories**

1. In the **Functions** tab in the **Category** panel, click the arrow next to **All Functions** to expand the list of categories.
2. Select a category. For more information on the categories or functions, see Analytical Functions (on page 64).
3. In the **Item** area, select a function.
4. In the **Values** area, set parameters marked with an asterisk for the function (see "Set a Parameter for a Function (Expression Builder)" on page 57).
5. Add the function at the location of the cursor in the **Expression** box (see "Add a Function at the Cursor (Expression Builder)" on page 55), at the end of an expression (see "Add a Function to the End of an Expression (Expression Builder)" on page 55), around an entire expression (see "Add a Function Around an Expression (Expression Builder)" on page 55), or around a selected part of an expression (see "Add a Function Around a Selected Part of an Expression (Expression Builder)" on page 55).

**Build an Expression by Typing in the Expression Box (Expression Builder)**

Typing expressions saves you the time of locating data items and functions and then adding them to the **Expression** box. You can also save time typing expressions by turning on the Auto Complete option.

As you select or type expressions, they appear in the Expression box. When you select functions, select parameters and add them to an expression. When you select data items, the syntax appears and updates in the Formula bar below the Data Items and Functions tabs. You cannot change functions in the Formula bar. You must change functions in the Expression box.

**To build an expression by typing**

1. On the Thomson Reuters menu, point to **Build** and click **Build an Expression**.
2. From the drop-down, select an entity type.
3. Type, search for (see "Look Up Identifiers" on page 122), or reference a cell (see "Reference a Cell (Report Builder)" on page 121) with an identifier.

4. In the Expression box, type an expression.

5. To check the syntax of an expression, see Expression Area (see "Expression Area (Expression Builder)" on page 62).

6. To evaluate the expression, see Expression Area (see "Expression Area (Expression Builder)" on page 62).

7. To export the expression to Excel, click Export. To customize your export, see Customize your Export (see "Customize Your Export (Expression Builder)" on page 63).

8. To clear the Expression box to create a new expression, click New.

Build an Expression Using the Auto Complete Option (Expression Builder)

The Auto Complete option anticipates the data item or function you want based on the text you are typing in the Expression box. As you type, the Auto Complete option opens a dialog containing a list of functions or data items that closely match the text you are typing. From this dialog, you can select the data item or function you are typing rather than continuing to type. The more characters you type, the more closely the functions listed in the Auto Complete box will match the characters you are typing.

To build an expression using the Auto Complete option
1. In the Expression (see "Expression Area (Expression Builder)" on page 62) area of Expression Builder, click the Options drop-down.
2. Click Use Auto Complete.
3. Begin typing a data item or function in the Expression box. See Analytical Functions (on page 64).
4. From the list of data items or functions that appears, double-click the item you want to include in your expression. You can also continue typing until the items in the list more closely match what you are typing.

Save an Expression (Expression Builder)

You can save any expression that you build and later reuse it, use it to build another expression, or use it as a data item (see "Browse by Category (Data Item Lookup)" on page 7).

When you create an expression, you can set parameters (see "Set Parameters (Data Item Lookup)" on page 9) on each data item in it.

When you create or edit an expression, the only parameters you can set for the entire expression are time series parameters: start date, end date, and frequency. When you create an expression as a time series expression, the start date, end date, and frequency apply to data items in the expression that support time series and for which you have not previously set a time series.

If you create and save an expression as a time series expression by setting its default start date, end date, and/or frequency, you can later access that expression through the Data Item tab, change the start date, end date, and/or frequency, and export the expression with the new temporary time series parameters. The saved expression retains the default start date, end date, and/or frequency.

If you do not save an expression as a time series expression, you cannot change the time series for a single export. Additionally, you can set the security level of an expression so that others can have read-write access, or read-only access.

You can also search for, view, delete, and create sub-folders for saved expressions through My Workbench (see "Manage Expressions (My Workbench)" on page 181).

To save an expression
1. After you have created an expression by starting with data items (see "Build an Expression Starting with Data Items (Expression Builder)" on page 53), by starting with analytical functions (see "Build an Expression Starting with Analytical Functions (Expression Builder)" on page 56), or by typing, click ...
2. To set a time series for the expression, click Parameters.
a. Select **Set Time Series Options**.
b. Select a Start Date (see "Start Date (Parameter)" on page 24), End Date (see "End Date (Parameter)" on page 17), and Frequency (see "Frequency (Parameter)" on page 18). For more information, see Date and Period Builder (on page 212).
c. Click **OK**.

3. In the **Save Expression** dialog **Name** box, type a name for the expression. This name appears in the function call. Additionally, if you include headers when you export (see "Customize Your Export (Expression Builder)" on page 63) the expression, this name appears on your spreadsheet.

4. To include a description for the expression, type it in the **Description** box.

5. Select a location for the expression, or click **New Folder**, type a name for the new folder, and click **OK**.

6. Select a security level for the expression.

7. Click **Save**.

You can view a saved expression or use one as a data item. When you view or use an expression as a data item, you cannot see or reset its parameters.

If you create and save an expression as a time series expression by setting its default start date, end date, and/or frequency, you can later access that expression through the Data Item tab, change the start date, end date, and/or frequency, and export the expression with the new temporary time series parameters. The saved expression retains the default start date, end date, and/or frequency.

To see an expression's parameters, edit an expression, or temporarily reset an expression's time series parameters for a single export, see Edit a Saved Expression (see "Edit a Saved Expression (Expression Builder)" on page 60).

### Edit a Saved Expression (Expression Builder)

After you save an expression (see "Save an Expression (Expression Builder)" on page 59), you can access it to view it, reuse it, edit it, or use it to build another expression (see "Build an Expression from a Saved Expression (Expression Builder)" on page 61).

When you create an expression, you can set parameters (see "Set Parameters (Data Item Lookup)" on page 9) on each data item in it.

When you create or edit an expression, the only parameters you can set for the entire expression are time series parameters: start date, end date, and frequency. When you create an expression as a time series expression, the start date, end date, and frequency apply to data items in the expression that support time series and for which you have not previously set a time series.

If you create and save an expression as a time series expression by setting its default start date, end date, and/or frequency, you can later access that expression through the Data Item tab, change the start date, end date, and/or frequency, and export the expression with the new temporary time series parameters. The saved expression retains the default start date, end date, and/or frequency.

To **edit a saved expression**

1. In **Expression Builder**, click ![Edit](edit_icon.png).
2. In the **Folders** area, browse through the folders, open a folder and select an expression.
3. Click **OK**.
4. To change the time series defaults, click **Parameters**.
   a. View the currently set start date, end date, and frequency in the **Expression Parameters** box.
   b. Click ![Set Time Series Options](set_time_series_icon.png).
   c. Select **Set Time Series Options**.
   d. Select a Start Date (see "Start Date (Parameter)" on page 24), End Date (see "End Date (Parameter)" on page 17), and Frequency (see "Frequency (Parameter)" on page 18). For more information, see Date and Period Builder (on page 212).
   e. Click **OK**.
5. To save the expression (see "Save an Expression (Expression Builder)" on page 59), click

6. To export the expression to Excel, click Export. To customize the export, see Customize Your Export (see "Customize Your Export (Expression Builder)" on page 63).

**Build an Expression from a Saved Expression (Expression Builder)**

You can create an expression, save it, and then use it later to create a separate expression.

You can use a saved expression to create a new expression, but you cannot use an expression that includes another to create a third expression.

If you set a time series in an expression that you previously saved or edited, those time series settings apply to the other data items that you add to create a new expression.

For example, on Monday, you create and save an expression with a data item but no start date, end date, or frequency. On Tuesday, you open the expression, set a start date and frequency for it, and add a mathematical operator and another data item to the expression. The newly set start date and frequency applies to the new data item, if that data item supports time series.

To build an expression from a saved expression

1. In Expression Builder, click

2. In the Folders area, browse through the folders, open a folder and select an expression.

3. Click OK.
   a. Select Set Time Series Options.
   b. Select a Start Date (see "Start Date (Parameter)" on page 24), End Date (see "End Date (Parameter)" on page 17), and Frequency (see "Frequency (Parameter)" on page 18). For more information, see Date and Period Builder (on page 212).

4. Click OK.

5. (Optional) Add data items, mathematical operators (on page 112), and/or analytical functions (on page 64).

6. To save the new expression (see "Save an Expression (Expression Builder)" on page 59), click

7. To export the expression to Excel, click Export. To customize the export, see Customize Your Export (see "Customize Your Export (Expression Builder)" on page 63).

**Set Time Series Parameters for Expressions (Expression Builder)**

All expressions, saved or unsaved, use the underlying syntax and parameters that you have set on the data items within the expression (see "Set Parameters (Data Item Lookup)" on page 9).

The time series signature in Expression Builder applies to items in the expression for which you have not set an absolute or relative start date, end date, or frequency and that support time series parameters.

If you do not save an expression as a time series expression, you cannot change the time series for a single export.

To set start date, end date, and frequency parameters for an expression

1. In Expression Builder, click

2. In the Folders area, browse through the folders, open a folder and select an expression.

3. Click OK.

4. Click Parameters.

5. In the Expression Parameters box, view the current parameters, and click ...


7. Select a Start Date (see "Start Date (Parameter)" on page 24), End Date (see "End Date (Parameter)" on page 17), and Frequency (see "Frequency (Parameter)" on page 18). For more information, see Date and Period Builder (on page 212).

8. Click OK.
# Expression Area (Expression Builder)

The Expression area is the top half of the Expression Builder work space. Within the Expression area are the Expression box, the operator buttons, and the toolbar, which allows you to undo, redo, check syntax, find and replace text, evaluate an expression, auto complete an expression, or add hyperlinks to functions.

<table>
<thead>
<tr>
<th>Expression box</th>
<th>The white area at the top of Expression Builder in which you build expressions (see “Expression Builder” on page 53).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Undo</strong></td>
<td>Click the <strong>Undo</strong> drop-down to undo up to ten of your most recent actions. Select &quot;1 Action&quot; to undo your most recent action in the <strong>Expression</strong> box, &quot;2 Action&quot; to undo your two most recent actions, etc.</td>
</tr>
<tr>
<td><strong>Redo</strong></td>
<td>Click the <strong>Redo</strong> drop-down to restore up to ten actions that you have undone. Select 1 Action to redo the most recent action that you have deleted with the <strong>Undo</strong> button, “2 Action” to redo your two most recent undo actions, etc.</td>
</tr>
<tr>
<td><strong>Check Syntax</strong></td>
<td>If the syntax is correct, a box appears with the message &quot;The expression syntax is valid.&quot; If the syntax is incorrect, a box appears with a message describing the source of the error and instructing you to check the syntax.</td>
</tr>
<tr>
<td><strong>Find and Replace</strong></td>
<td>To find and replace text, , type the text you want to replace in the <strong>Find what</strong> box, type replacement text in the <strong>Replace With</strong> box, and click <strong>Replace</strong>.</td>
</tr>
<tr>
<td><strong>Evaluate expression</strong></td>
<td>Evaluate an expression to preview the data that will appear in the Excel spreadsheet when you export your expression. Click <strong>Evaluate</strong>, type an identifier in the <strong>Enter Identifier</strong> box, and click <strong>Evaluate</strong>.</td>
</tr>
</tbody>
</table>
## Auto Complete an expression

The Auto Complete option anticipates the data item or function you want based on the text you are typing in the Expression box. As you type, the Auto Complete option opens a dialog containing a list of functions or data items that closely match the text you are typing. From this dialog, you can select the data item or function you are typing rather than continuing to type. The more characters you type, the more closely the functions listed in the Auto Complete box will match the characters you are typing.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Complete</td>
<td>The Auto Complete option anticipates the data item or function you want</td>
</tr>
<tr>
<td>Hyperlink Variables</td>
<td>based on the text you are typing in the Expression box. As you type, the</td>
</tr>
</tbody>
</table>

## Add hyperlinks to functions

You can modify the parameters you assign to a function with the Hyperlink Variables option. This option applies hyperlinks to parameters. These hyperlinks enable you to click the parameters and modify them by adding data items and functions. See Modify Parameters using Hyperlinks (see "Modify Parameters using Hyperlinks (Expression Builder)" on page 57). For more information about assigning parameters to functions, see Set a Parameter (see "Set a Parameter for a Function (Expression Builder)" on page 57).

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Complete</td>
<td>You can modify the parameters you assign to a function with the Hyperlink</td>
</tr>
<tr>
<td>Variables</td>
<td>Variables option. This option applies hyperlinks to parameters. These</td>
</tr>
</tbody>
</table>

## Operator Buttons

See Mathematical Operators (on page 112) for a list and description of available operators.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Complete</td>
<td>You can modify the parameters you assign to a function with the Hyperlink</td>
</tr>
<tr>
<td>Hyperlink</td>
<td>Variables option. This option applies hyperlinks to parameters. These</td>
</tr>
</tbody>
</table>

## Customize Your Export (Expression Builder)

After building an expression, you can click Export to export the expression to Excel. You can customize your export and set your defaults for future exports to Excel. Export options differ by component.

### To customize your export of an expression to Excel

1. After building an expression (see "Expression Builder" on page 53), click on the Excel spreadsheet where you would like to export your data.
2. Click the Export drop-down, and choose Export As.
3. Select Identifier Type, Calculation Type, Layout, Output, Headers, and Clean-Up criteria from the appropriate drop-downs.
4. Select if you would like to keep these settings as defaults when exporting data.
5. To view the options every time you export, select Always show these settings when exporting data.
6. **Click OK** to export to Excel.

![Export dialog box](image)

**Analytical Functions**

Queries rely on functions and function arguments to retrieve information. Functions contain arguments, which are item-specific components for data retrieval. Most arguments have a default values, but you can create parameters and filters to retrieve the data that is most important to you.

Below these function categories is an alphabetical list of all available functions.

- **Availability Functions** (on page 68)
- **Expression Properties** (on page 70)
- **General Functions** (see "DAYS_BETWEEN (General Functions)" on page 75)
- **Linear Trends and Growth Rates** (see "Linear Trends & Growth Rates" on page 76)
- **Logical Functions** (on page 87)
- **Mathematical Functions** (on page 89)
- **Relative & Value Functions** (see "Relative and Value Functions" on page 94)
- **Sorting Functions** (on page 97)
- **Statistical Functions** (on page 98)
- **String Functions** (on page 108)

**Alphabetical list of all functions**

- **ABS** (see "ABS (Mathematical Functions)" on page 89) (absolute value)
- **ACOS** (see "ACOS (Mathematical Functions)" on page 90) (arcosine)
- **AND** (see "AND (Logical Functions)" on page 88) (aggregates values)
- **ASIN** (see "ASIN (Mathematical Functions)" on page 90) (arcsine)
- **ATAN** (see "ATAN (Mathematical Functions)" on page 90) (arctangent)
- **AV** (see "AV (Availability Functions)" on page 68) (pull data from fx1, then for all null data, pull from fx2, then for all null data, pull from fx3, etc.)
- **AVG** (see "AVG (Same as MEAN) (Statistical Functions)" on page 99) (average of fx)
- **CALCULATION DATE PROPERTY** (see "Calculation Date Property (Expression Properties)" on page 72) (calculation date of the expression)
- **CASE** (see "CASE (String Functions)" on page 109) (capitalizes the first character in each word)
- **CEILING** (see "CEILING (Mathematical Functions)" on page 91) (ceiling)
- **CHARPOS** (see "CHARPOS (String Functions)" on page 109) (returns the character at the given position)
COMPOUND GROWTH (see "COMPOUND GROWTH RATE (Linear Trend & Growth Rate Functions)" on page 77) (returns the constant growth rate per period)

CONTAINS (see "CONTAINS (String Functions)" on page 109) (returns 1 if given text is found within the string)

CORREL (see "CORREL (Linear Trend & Growth Rate Functions)" on page 77) (correlation [linear regression against time])

COS (see "COS (Mathematical Functions)" on page 91) (cosine)

COUNT (see "COUNT (Statistical Functions)" on page 99) (non-null values of count)

CURRENCY PROPERTY (see "Currency Property (Expression Properties)" on page 70) (ISO currency of the expression)

DATE PROPERTY (see "Date Property (Expression Properties)" on page 70) (data date of the expression)

DAYS_BETWEEN (see "DAYS_BETWEEN (General Functions)" on page 75) (returns the number of days between two dates)

DESCRIPTION PROPERTY (see "Description Property (Expression Properties)" on page 71) (description of the expression)

DISPLAY NAME PROPERTY (see "Display Name Property (Expression Properties)" on page 71) (display name of the expression)

DOES_NOT_CONTAIN (see "DOES_NOT_CONTAIN (String Functions)" on page 110) (returns 1 if given text is not found within the string)

DOWN_SEQ (see "DOWN_SEQ (Statistical Functions)" on page 99) (down sequence)

EXP (see "EXP (Mathematical Functions)" on page 91) (the exponent of the number)

EXPSMOOTH (see "EXPSMOOTH (Statistical Functions)" on page 99) (exponential smoothing)

FISCAL PERIOD END PROPERTY (see "Fiscal Period End Property (Expression Properties)" on page 71) (fiscal period end property of the expression)

FLOOR (see "FLOOR (Mathematical Functions)" on page 91) (floor)

FRAC (see "FRAC (Mathematical Functions)" on page 92) (the fractional part of the number)

GMEAN (see "GMEAN (Statistical Functions)" on page 100) (geometric mean)

HAVG (see "HAVG (Statistical Functions)" on page 100) (harmonic average)

IF (see "IF (Logical Functions)" on page 88) (if the value from fx1 is less than or greater than 0, then fx2, else fx3 [fx2 and fx3 can be literals])

IN (see "IN (General Functions)" on page 74) (returns 1 if the function value appears in the list of values)

INDEX (see "INDEX (Relative & Value Functions)" on page 95) (converts time series data to be based to a specified index base value at the start date)

INDXTD (see "INDXTD (Relative & Value Functions)" on page 95) (converts a time series array of values to a cumulative percent change basis)

INT (see "INT (Mathematical Functions)" on page 92) (the integer part of the number)

INTERCEPT (see "INTERCEPT (Linear Trend & Growth Rate Functions)" on page 77) (intercept [linear regression against time])

LEFT (see "LEFT (String Functions)" on page 110) (returns the left-most characters)

LN (see "LN (Mathematical Functions)" on page 92) (natural logarithm)

LOG (see "LOG (Mathematical Functions)" on page 93) (base 10 logarithm)

LOWERCASE (see "LOWERCASE (String Functions)" on page 110) (converts all letters to lowercase)
MAX (see "MAX (Statistical Functions)" on page 100) (maximum)
MAX_INDEX (see "MAX_INDEX (Statistical Functions)" on page 101) (position in the time series of the maximum value)
MEDIAN (see "MEDIAN (Statistical Functions)" on page 101) (median)
MIN (see "MIN (Statistical Functions)" on page 101) (minimum)
MIN_INDEX (see "MIN_INDEX (Statistical Functions)" on page 102) (position in the time series of the minimum value)
NAME PROPERTY (see "Name Property (Expression Properties)" on page 72) (name of the expression)
NOT_IN (see "NOT_IN (General Functions)" on page 74) (returns 0 if the function value appears in the list of values)
OR (see "OR (Logical Functions)" on page 88) (refers to both operators)
OUT_OF_RANGE (see "OUT_OF_RANGE (General Functions)" on page 74) (returns 0 if the value falls between the start and the end)
PERCENT_CHG (see "PERCENT_CHG (Mathematical Functions)" on page 93) (percent change)
POW (see "POW (Mathematical Functions)" on page 93) (raises fx to the power of a number)
RANGE (see "RANGE (General Functions)" on page 74) (returns 1 if the value falls between the start and the end)
RATE (see "RATE (Linear Trend & Growth Rate Functions)" on page 78) (growth rate)
RATEC (see "RATEC (Linear Trend & Growth Rate Functions)" on page 78) (correlation coefficient)
RATED (see "RATED (Linear Trend & Growth Rate Functions)" on page 79) (standard error of the slope)
RATEE (see "RATEE (Linear Trend & Growth Rate Functions)" on page 79) (estimate error)
RATEI (see "RATEI (Linear Trend & Growth Rate Functions)" on page 79) (intercept)
RATES (see "RATES (Linear Trend & Growth Rate Functions)" on page 80) (slope error)
RCORREL (see "RCORREL (Linear Trend & Growth Rate Functions)" on page 81) (correlation)
REGCORREL (see "REGCORREL (Linear Trend & Growth Rate Functions)" on page 81) (correlation)
REGINTERCEPT (see "REGINTERCEPT (Linear Trend & Growth Rate Functions)" on page 82) (intercept)
REGRSQUARE (see "REGRSQUARE (Linear Trend & Growth Rate Functions)" on page 83) (R-square)
REGSLOPE (see "REGSLOPE (Linear Trend & Growth Rate Functions)" on page 82) (slope)
REGSLOPESTD (see "REGSLOPESTD (Linear Trend & Growth Rate Functions)" on page 83) (standard deviation)
REGSTDERR (see "REGSTDERR (Linear Trend & Growth Rate Functions)" on page 84) (standard error)
REL (see "REL (Relative & Value Functions)" on page 95) (returns the function value relative to the symbol)
RELTD (see "RELTD (Relative & Value Functions)" on page 96) (converts a time series array of values to a cumulative percent change basis, relative to a specified identifier)
RELX (see "RELX (Relative & Value Functions)" on page 96) (returns the function value relative to the symbol returned from symbol_fx)
RIGHT (see "RIGHT (String Functions)" on page 110) (returns the right-most characters)
RINTERCEPT (see "RINTERCEPT (Linear Trend & Growth Rate Functions)" on page 84) (intercept)
ROUND (see "ROUND (General Functions)" on page 75) (rounds a number to a number of decimal places)
RRSQUARE (see "RRSQUARE (Linear Trend & Growth Rate Functions)" on page 84) (R-square)
RSI (see "RSI (Statistical Functions)" on page 102) (Relative Strength Index)
RSLOPE (see "RSLOPE (Linear Trend & Growth Rate Functions)" on page 85) (slope)
RSLOPESTD (see "RSLOPESTD (Linear Trend & Growth Rate Functions)" on page 85) (standard deviation)
RSQUARE (see "RSQUARE (Linear Trend & Growth Rate Functions)" on page 86) (R-square [linear regression against time])
RSTDERR (see "RSTDERR (Linear Trend & Growth Rate Functions)" on page 86) (standard error)
SIN (see "SIN (Mathematical Functions)" on page 93) (sine)
SLOPE (see "SLOPE (Linear Trend & Growth Rate Functions)" on page 86) (slope [linear regression against time])
SLOPESTD (see "SLOPESTD (Linear Trend & Growth Rate Functions)" on page 87) (standard deviation [linear regression against time])
SORT_ASCEND (see "SORT_ASCEND (Miscellaneous Functions)" on page 97) (sort ascending)
SORT_DESCEND (see "SORT_DESCEND (Miscellaneous Functions)" on page 97) (sort descending)
SORT_INDIRECT_ASCEND (see "SORT_INDIRECT_ASCEND (Miscellaneous Functions)" on page 97) (sort based on order of first function [ascending])
SORT_INDIRECT_DESCEND (see "SORT_INDIRECT_DESCEND (Miscellaneous Functions)" on page 98) (sort based on order of first function [descending])
SQR (see "SQR (Mathematical Functions)" on page 94) (square root)
STATUS PROPERTY (see "Status Property (Expression Properties)" on page 73) (status of the expression)
STD (see "STD (Statistical Functions)" on page 102) (standard deviation)
STDERR (see "STDERR (Linear Trend & Growth Rate Functions)" on page 87) (standard error [linear regression against time])
STDP (see "STDP (Statistical Functions)" on page 103) (standard deviation of population)
STRINGLENGTH (see "STRINGLENGTH (String Functions)" on page 111) (returns the length of the string)
SUBSTRING (see "SUBSTRING (String Functions)" on page 111) (returns part of the string)
SUM (see "SUM (Statistical Functions)" on page 103) (sum)
TAN (see "TAN (Mathematical Functions)" on page 94) (tangent of an angle)
TEXT AVAILABLE (see "Text Available (Availability Functions)" on page 69) (replaces NULL string with provided string)
UP_SEQ (see "UP_SEQ (Statistical Functions)" on page 103) (up sequence)
UPPERCASE (see "UPPERCASE (String Functions)" on page 111) (converts all letters to uppercase)
VALUE (see "VALUE (Relative & Value Functions)" on page 96) (returns the function value run for the symbol)
VALUE PROPERTY (see "Value Property (Expression Properties)" on page 73) (value of the expression)
VALUEX (see "VALUEX (Relative & Value Functions)" on page 97) (returns the function value run for the symbol returned from symbol_fx)
VAR (see "VAR (Statistical Functions)" on page 104) (variance)
VARP (see "VARP (Statistical Functions)" on page 104) (population variance)
WAVG (see "WAVG (Statistical Functions)" on page 104) (weighted average)
WGMEAN (see "WGMEAN (Statistical Functions)" on page 105) (weighted geometric mean)
WHAVG (see "WHAVG (Statistical Functions)" on page 105) (weighted harmonic average)
WMEDIAN (see "WMEDIAN (Statistical Functions)" on page 106) (weighted median)
WSTD (see "WSTD (Statistical Functions)" on page 106) (weighted standard deviation)
WSTDP (see "WSTDP (Statistical Functions)" on page 107) (weighted standard deviation of population)
WVAR (see "WVAR (Statistical Functions)" on page 108) (weighted variance)
WVARP (see "WVARP (Statistical Functions)" on page 107) (population weighted variance)
XOR (see "XOR (Logical Functions)" on page 88) (operates only if one of two values matches)
ZERO AVAILABLE (see "Zero Available (Availability Functions)" on page 69) (replaces NULL value with 0)

**Availability Functions**

Availability functions pull available data and replace NULL values or strings.

**AV** (see "AV (Availability Functions)" on page 68) (available: pulls data from fx1 and then for all null data, pulls from fx2 and then for all null data, pulls from fx3, etc.)

**TEXT AVAILABLE** (see "Text Available (Availability Functions)" on page 69) (replaces NULL string with provided string)

**ZERO AVAILABLE** (see "Zero Available (Availability Functions)" on page 69) (replaces NULL value with 0)
**AV (Availability Functions)**

The AV function checks whether an if_condition is True and, if so, returns a then_value. If the if_condition is False, it returns an else_value. It conducts conditional tests on values and formulas.

There may be any number of if_condition and then_value pairs. There must be one final else_value. This function requires an odd number of arguments.

\[ F(x) : AV(if\_condition,then\_value,else\_value) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>if_condition</td>
<td>number</td>
<td>the first logical value to test</td>
</tr>
<tr>
<td>then_value</td>
<td></td>
<td>the value to return if condition is True</td>
</tr>
<tr>
<td>else_value</td>
<td></td>
<td>the value to return if all if_conditions are False</td>
</tr>
</tbody>
</table>

**Text Available (Availability Functions)**

The Text Available function (TEXTAV) provides a method to replace nulls with a string value.

The Array parameter accepts any data item or expression, and can be a scalar input or array input.

The Match parameter is the string that replaces the nulls. It is not necessary to delimit by quotation marks in the formula or user interface.

**Usage example**

The following example shows FY1 Fundamental Sales function (always null) using TEXTAV to produce the string "match string".

| Function Call Sample Formula | TF("IBM", "TEXTAV(TF.FN.Sales(FY1),match string)") |

**Zero Available (Availability Functions)**

The Zero Available function (ZAV) provides a method to replace nulls with a numeric zero.

The Number Array parameter accepts any data item or expression, and can be a scalar input or array input.

**Usage example**

The following example shows FY1 Fundamental Sales function (always null) using ZAV to produce a zero.

| Function Call Sample Formula | TF("IBM", "ZAV( TF.FN.Sales(FY1) )") |
Expression Properties

Expression property functions return information about the expression.

CALCULATION DATE PROPERTY (see "Calculation Date Property (Expression Properties)" on page 72) (calculation date of the expression)

CURRENCY PROPERTY (see "Currency Property (Expression Properties)" on page 70) (ISO currency of the expression)

DATE PROPERTY (see "Date Property (Expression Properties)" on page 70) (data date of the expression)

DESCRIPTION PROPERTY (see "Description Property (Expression Properties)" on page 71) (description of the expression)

DISPLAY NAME PROPERTY (see "Display Name Property (Expression Properties)" on page 71) (display name of the expression)

FISCAL PERIOD END PROPERTY (see "Fiscal Period End Property (Expression Properties)" on page 71) (fiscal period end property of the expression)

NAME PROPERTY (see "Name Property (Expression Properties)" on page 72) (name of the expression)

STATUS PROPERTY (see "Status Property (Expression Properties)" on page 73) (status of the expression)

VALUE PROPERTY (see "Value Property (Expression Properties)" on page 73) (value of the expression)

Currency Property (Expression Properties)

The CURRENCY property returns the currency (ISO) of the expression.

\[ F(x): \text{Currency\_Property}(f_x) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_x )</td>
<td>function</td>
<td>function</td>
</tr>
</tbody>
</table>

Usage example

You can use this function to return the currency for the selected data item.

Function Call Sample Formula

\[ =\text{TF}("MSFT", \text{"PROP\_CURRENCY(TF\_PR\_PriceClose(sdate=0D))")} \]

Date Property (Expression Properties)

The DATE property returns the report date of the data item or the date that the data became public.

\[ F(x): \text{Date\_Property}(f_x) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_x )</td>
<td>function</td>
<td>function</td>
</tr>
</tbody>
</table>
Usage example
You can use this function to return the date for the selected data item.

Function Call Sample Formula
=TF("MSFT", "PROP_DATE(TF.PR.PriceClose(sdate=0D))")

Description Property (Expression Properties)
The DESCRIPTION property returns the description of the expression (top-most function) or data.

F(x): Description_Property(fx)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>function</td>
<td>function</td>
</tr>
</tbody>
</table>

Usage example
You can use this function to return the description for the selected data item.

Function Call Sample Formula
=TF("MSFT", "PROP_DESCRIPTION(TF.PR.PriceClose(sdate=0D))")

Display Name Property (Expression Properties)
The Display Name property returns the display name of the expression (top-most function).

F(x): Display_Name_Property(fx)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>function</td>
<td>function</td>
</tr>
</tbody>
</table>

Usage example
You can use this function to return the display name for the selected data item.

Function Call Sample Formula
=TF("MSFT", "PROP_DISPLAYNAME(TF.PR.PriceClose(sdate=0D))")

Fiscal Period End Property (Expression Properties)
The Fiscal Period End property returns the fiscal period end date of the expression.

F(x): Fiscal_Period_End_Property(fx)
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>function</td>
<td>function</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to return the fiscal period end date for the selected data item.

**Function Call Sample Formula**

=TF("MSFT", "PROP_FPEDATE(TF.PR.PriceClose(sdate=0D))")

**Name Property (Expression Properties)**

The NAME property returns the name, or function code, of the expression (top-most function) or data item.

\[ F(x): \text{NAME\_Property}(fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>function</td>
<td>function</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to return the name of the selected data item.

**Function Call Sample Formula**

=TF("MSFT", "PROP_NAME(TF.PR.PriceClose(sdate=0D))")

**Calculation Date Property (Expression Properties)**

The Calculation Date Property function (PROP\_CALCDATE) returns the calculation date of the expression. The Any parameter accepts an expression (even a single item expression).

**Usage example**

The following function returns the date of a Price to Earnings expression.

**Function Call Sample Formula**

TF("IBM", "PROP\_CALCDATE( TF.PR.PriceClose()/TF.ES.EPS.Mean(FY1) )")
Status Property (Expression Properties)

The Status property returns a code that corresponds to a description of why a function call returns a null value. If a function call does not return a null value then the Status property returns a zero (0).

\[ F(x) : Status\_Property(fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>function</td>
<td>function</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to return the status for the selected data item.

**Function Call Sample Formula**

\[ =TF("MSFT", "PROP\_STATUS(TF.PR.PriceClose(sdate=0D))") \]

Value Property (Expression Properties)

The Value property returns the value of the expression.

\[ F(x) : Value\_Property(fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>function</td>
<td>function</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to return the value for the selected data item.

**Function Call Sample Formula**

\[ =TF("MSFT", "PROP\_VALUE(TF.PR.PriceClose(sdate=0D))") \]

General Functions

General functions return a 1 or 0 if the function value meets certain criteria, or round a number to a number of decimal places.

- **IN** (see "IN (General Functions)" on page 74) (returns 1 if the function value appears in the list of values)
- **NOT\_IN** (see "NOT\_IN (General Functions)" on page 74) (returns 0 if the function value appears in the list of values)
- **OUT\_OF\_RANGE** (see "OUT\_OF\_RANGE (General Functions)" on page 74) (returns 0 if the value falls between the start and the end)
- **RANGE** (see "RANGE (General Functions)" on page 74) (returns 1 if the value falls between the start and the end)
- **ROUND** (see "ROUND (General Functions)" on page 75) (rounds a number to a number of decimal places)
DAYS_BETWEEN (see "DAYS_BETWEEN (General Functions)" on page 75) (returns the number of days between two dates)

IN (General Functions)

The In function (IN) checks if an evaluated data item is contained within a list of values, returning "1" if true (contained) or "0" if false.

The Any String parameter accepts a data item function code.

The String List parameter is a hardcoded comma separated list.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns a &quot;1&quot; (1=True) in evaluating if ticker BAC has an ICB Industry Code of 8000 or 9000.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF(&quot;BAC&quot;, &quot;IN(TF.ICBIndustryCode(),8000,9000)&quot; )</td>
</tr>
</tbody>
</table>

NOT_IN (General Functions)

The Not_In function (NOT_IN) checks if an evaluated data item is not contained within a list of values, returning "1" if true (not contained) or "0" if false.

The Any String parameter accepts a data item function code.

The String List parameter is a hard-coded comma-separated list.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns a &quot;1&quot; (1=True) in evaluating if ticker VLO has an ICB Industry Code different from 8000 or 9000.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF(&quot;VLO&quot;,&quot;NOT_IN(TF.ICBIndustryCode(),8000,9000)&quot; )</td>
</tr>
</tbody>
</table>

OUT_OF_RANGE (General Functions)

The OUT_OF_RANGE function returns 0 if the fx value falls inclusively between least and greatest. Otherwise, it returns 1.

\[ F(x) = \text{OUT_OF_RANGE}(fx, \text{least}, \text{greatest}) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
<tr>
<td>least</td>
<td>numeric</td>
<td>the least possible value</td>
</tr>
<tr>
<td>greatest</td>
<td>numeric</td>
<td>the greatest possible value</td>
</tr>
</tbody>
</table>

RANGE (General Functions)

The RANGE function returns 1 if the fx value falls inclusively between least and greatest. Otherwise, it returns 0.
F(x): RANGE(fx, least, greatest)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
<tr>
<td>least</td>
<td>numeric</td>
<td>the least possible value</td>
</tr>
<tr>
<td>greatest</td>
<td>numeric</td>
<td>the greatest possible value</td>
</tr>
</tbody>
</table>

**ROUND (General Functions)**

The ROUND function returns the value of a number rounded to a specified number of decimal places.

F(x): ROUND(number, decimals)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>number</td>
<td>the number you want to round</td>
</tr>
<tr>
<td>decimals</td>
<td>number</td>
<td>the number of decimal places to which you want to round the number</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to round a mean estimate to a dollars and cents number.

**Function Call Sample Formula**

TF("IBM", "ROUND(TF.ES.EPS.Mean(period=+1FY),2)")

**DAYS_BETWEEN (General Functions)**

The DAYS_BETWEEN function returns the number of days between two specified dates.

F(x): DAYS_BETWEEN(any_date_1, any_date_2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>any_date_1</td>
<td></td>
</tr>
<tr>
<td>any_date_2</td>
<td></td>
</tr>
</tbody>
</table>
Usage Example

You can use this function to calculate the number of days between the date of the 52 week high price and the date of the most recent closing price.

Function Call Sample Formula

TF("IBM", "DAYS_BETWEEN(TF.PR.PriceDate(),TF.PR.PriceHighDate52Wk())")

Linear Trends & Growth Rates

Linear trend functions return properties of linear regressions for a given function. Growth Rate functions return the value of growth rate computation on a range of values.

Measures of linear regression against time

CORREL (see "CORREL (Linear Trend & Growth Rate Functions)" on page 77) (correlation [linear regression against time])
INTERCEPT (see "INTERCEPT (Linear Trend & Growth Rate Functions)" on page 77) (intercept [linear regression against time])
RSQUARE (see “RSQUARE (Linear Trend & Growth Rate Functions)” on page 86) (R-square linear regression against time)
SLOPE (see "SLOPE (Linear Trend & Growth Rate Functions)" on page 86) (slope [linear regression against time])
SLOPESTD (see "SLOPESTD (Linear Trend & Growth Rate Functions)" on page 87) (standard deviation [linear regression against time])
STDERR (see “STDERR (Linear Trend & Growth Rate Functions)” on page 87) (standard error [linear regression against time])

Measures of linear regression against the same function run for the symbol

RCORREL (see “RCORREL (Linear Trend & Growth Rate Functions)” on page 81) (correlation)
RINTERCEPT (see "RINTERCEPT (Linear Trend & Growth Rate Functions)" on page 84) (intercept)
RRSQUARE (see “RRSQUARE (Linear Trend & Growth Rate Functions)” on page 84) (R-square)
RSLOPE (see "RSLOPE (Linear Trend & Growth Rate Functions)" on page 85) (slope)
RSLOPESTD (see "RSLOPESTD (Linear Trend & Growth Rate Functions)" on page 85) (standard deviation)
RSTDERR (see “RSTDERR (Linear Trend & Growth Rate Functions)” on page 86) (standard error)

Measures of linear regression of a function against a second function

REGCORREL (see “REGCORREL (Linear Trend & Growth Rate Functions)” on page 81) (correlation)
REGINTERCEPT (see "REGINTERCEPT (Linear Trend & Growth Rate Functions)" on page 82) (intercept)
REGRSQUARE (see "REGRSQUARE (Linear Trend & Growth Rate Functions)” on page 82) (R-square)
REGSLOPE (see "REGSLOPE (Linear Trend & Growth Rate Functions)” on page 83) (slope)
REGSLOPESTD (see “REGSLOPESTD (Linear Trend & Growth Rate Functions)” on page 83) (standard deviation)
REGSTDERR (see “REGSTDERR (Linear Trend & Growth Rate Functions)” on page 84) (standard error)

Growth Rate Functions

CGR (see "COMPOUND GROWTH RATE (Linear Trend & Growth Rate Functions)” on page 77) (compound growth rate)
RATE (see "RATE (Linear Trend & Growth Rate Functions)" on page 78) (growth rate)
RATEC (see "RATEC (Linear Trend & Growth Rate Functions)" on page 78) (correlation coefficient)
RATED (see "RATED (Linear Trend & Growth Rate Functions)" on page 79) (standard error of the slope)
RATEE (see "RATEE (Linear Trend & Growth Rate Functions)" on page 79) (estimate error)
RATEI (see "RATEI (Linear Trend & Growth Rate Functions)" on page 79) (intercept)
RATES (see "RATES (Linear Trend & Growth Rate Functions)" on page 80) (slope error)

CORREL (Linear Trend & Growth Rate Functions)

The Correlation function (CORREL) function returns the correlation of a simple linear regression of a specific data set against time. Correlation coefficient indicates the strength and direction of a linear relationship between two variables. In this case, one variable is the data item specified in the Formula parameter, and the other variable is time.

The Formula parameter accept a time-series data set.

Usage example

The following function returns the correlation coefficient of the linear regression of 200-day price of IBM against time.

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF(&quot;IBM&quot;, &quot;CORREL(TF.PR.PriceClose(sdate=0, edate=-199, frq=d))&quot;)</td>
</tr>
</tbody>
</table>

COMPOUND GROWTH RATE (Linear Trend & Growth Rate Functions)

The COMPOUND GROWTH RATE function returns the constant growth rate per period that causes the initial value to grow to the final value.

The Formula parameter accepts a time series data set.

Usage example

The following function returns the compound annual growth rate of IBM's EPS over 5 years.

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF(&quot;IBM&quot;, &quot;CGR(TF.FN.EPS(period=FY0, sdate=0, edate=-4, frq=FY))&quot;)</td>
</tr>
</tbody>
</table>

INTERCEPT (Linear Trend & Growth Rate Functions)

The Intercept function (INTERCEPT) returns the intercept of a simple linear regression of a specific data set against time. Intercept is the value of variable Y when variable X is zero in a simple linear regression. In this case, the Y variable is the data item specified in the Formula parameter, and the X variable is time.

The Formula parameter accepts a time-series data set.
### Usage example

The following function returns the intercept of the linear regression of 200-day price of IBM against time.

| Function Call Sample Formula | TF("IBM", "INTERCEPT(TF.PR.PriceClose(sdate=0,edate=-199,frq=D))") |

### RATE (Linear Trend & Growth Rate Functions)

The Growth Rate (RATE) function returns the percentage rate at which the economy, stocks or earnings are growing over a period of time. Individual companies try to establish a rate at which their earnings grow over time. Firms with long-term earnings growth of more than 15% are considered fast-growing companies.

RATE returns the average growth rate estimated as a least-squares growth rate. Least-squares growth rate is measured based on the following regression equation: \( \ln X_t = a + bt \), where \( X \) is the variable, \( t \) is the time, and the growth rate \( r \) equals \( e^{b-1} \). In this case, \( X \) is the data item specified in the Formula parameter.

The Formula parameter accepts a time series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the average annual least-squares growth rate of IBM's EPS over 12 years.</td>
<td></td>
</tr>
</tbody>
</table>

| Function Call Sample Formula | TF("IBM", "RATE(TF.FN.EPS(period=FY0,sdate=0,edate=-11,frq=FY))") |

### RATEC (Linear Trend & Growth Rate Functions)

The Growth Rate Correlation Coefficient function (RATEC) function returns the correlation coefficient of the growth rate with respect to time.

RATEC returns the correlation coefficient of the regression used to calculate least-squares growth rate: \( \ln X_t = a + bt \), where \( X \) is the variable, \( t \) is the time, and the growth rate \( r \) equals \( e^{b-1} \). In this case, \( X \) is the data item specified in the Formula parameter.

The Formula parameter accepts a time series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the correlation coefficient of the regression used to calculate average annual least-squares growth rate of IBM's EPS over 12 years.</td>
<td></td>
</tr>
</tbody>
</table>

| Function Call Sample Formula | TF("IBM", "RATEC(TF.FN.EPS(period=FY0,sdate=0,edate=-11,frq=FY))") |
RATED (Linear Trend & Growth Rate Functions)

The Growth Rate Slope Error function (RATED) function returns the standard error of the slope of the growth rate over a period of time.

RATED returns the standard error of the slope of the regression used to calculate least-squares growth rate: LnXt=a+btt, where X is the variable, t is the time, and the growth rate r equals eb-1. In this case, X is the data item specified in the Formula parameter.

The Formula parameter accepts a time series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the standard error of the slope of the regression used to calculate average annual least-squares growth rate of IBM's EPS over 12 years.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF(&quot;IBM&quot;, &quot;RATED(TF.FN.EPS(period=FY0,sdate=0,edate=-11,frq=FY))&quot;)</td>
</tr>
</tbody>
</table>

RATEE (Linear Trend & Growth Rate Functions)

The Growth Rate Estimated Error function (RATEE) function returns the estimated error of the growth rate over a period of time.

RATEE returns the standard error of the regression used to calculate least-squares growth rate: LnXt=a+btt, where X is the variable, t is the time, and the growth rate r equals eb-1. In this case, X is the data item specified in the Formula parameter.

The Formula parameter accepts a time series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the standard error of the regression used to calculate average annual least-squares growth rate of IBM's EPS over 12 years.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF(&quot;IBM&quot;, &quot;RATEE(TF.FN.EPS(period=FY0,sdate=0,edate=-11,frq=FY))&quot;)</td>
</tr>
</tbody>
</table>

RATEI (Linear Trend & Growth Rate Functions)

The Rate Intercept (RATEI) function returns the intercept of the regression of growth rate against time.

RATEI returns the intercept of the regression used to calculate least-squares growth rate: LnXt=a+btt, where X is the variable, t is the time, and the growth rate r equals eb-1. In this case, X is the data item specified in the Formula parameter.

The Formula parameter accepts a time series data set.
### Usage example

The following function returns the intercept of the regression used to calculate average annual least-squares growth rate of IBM's EPS over 12 years.

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
<th>TF(&quot;IBM&quot;, &quot;RATE(TF.FN,EPS(period=FY0,sdate=0,edate=-11,frq=FY))&quot;)</th>
</tr>
</thead>
</table>

**RATES (Linear Trend & Growth Rate Functions)**

The Rate Slope function (RATES) function returns the slope of the regression of growth rate against time.

RATES returns the slope of the regression used to calculate least-squares growth rate: \( \text{Ln}X_t = a + bt \), where \( X \) is the variable, \( t \) is the time, and the growth rate \( r \) equals \( eb-1 \). In this case, \( X \) is the data item specified in the Formula parameter.

The Formula parameter accepts a time series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the slope of the regression used to calculate average annual least-squares growth rate of IBM's EPS over 12 years.</td>
<td></td>
</tr>
<tr>
<td><strong>Function Call Sample Formula</strong></td>
<td>TF(&quot;IBM&quot;, &quot;RATES(TF.FN.EPS(period=FY0,sdate=0,edate=-11,frq=FY))&quot;)</td>
</tr>
</tbody>
</table>

**RCORREL (Linear Trend & Growth Rate Functions)**

The Relative Correlation function (RCORREL) returns the correlation coefficient of a simple linear regression on the same data item for two different tickers. Correlation coefficient indicates the strength and direction of a linear relationship between two variables. In this case, one variable is the data item for a ticker specified in the Formula parameter, and the other variable is the same item for the ticker specified in the Identifier parameter.

The Identifier parameter accepts a ticker.

The Formula parameter accepts a time-series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the correlation coefficient of the linear regression of 200-day price percent change of IBM against 200-day price percent change of S&amp;P 500.</td>
<td></td>
</tr>
<tr>
<td><strong>Function Call Sample Formula</strong></td>
<td>TF(&quot;IBM&quot;, &quot;RCORREL(&quot;SPX&quot;,TF.PR.PriceClose(sdate=0,edate=-199,frq=d))&quot;)</td>
</tr>
</tbody>
</table>

**REGCORREL (Linear Trend & Growth Rate Functions)**

The Regression Correlation function (REGCORREL) returns the correlation coefficient of a simple linear regression of two different data items for the same ticker. Correlation coefficient indicates the strength and direction of a linear relationship between two variables. In this case, one variable is the data item specified in the Formula parameter, and the other variable is the data item specified in the Formula 2 parameter.

The Formula parameter accepts a time-series data set.

The Formula 2 parameter accepts a time-series data set.
### Usage example

The following function returns the correlation coefficient of the linear regression of 20-quarter net income of IBM against 20-quarter sales of IBM.

| Function Call Sample Formula | TF("IBM", "REGCORREL(TF.FN.Sales(period=0FQ,sdate=0,edate=-19,frq=FQ),TF.FN.NetIncome(period=0FQ,sdate=0,edate=-20,frq=FQ))") |

### REGINTERCEPT (Linear Trend & Growth Rate Functions)

The Regression Intercept function (REGINTERCEPT) returns the intercept of a simple linear regression of two different data items for the same ticker. Intercept is the value of variable Y when variable X is zero in a simple linear regression. In this case, the Y variable is the data item specified in the Formula parameter, and the X variable is the data items specified in the Formula 2 parameter.

The Formula parameter accepts a time-series data set.

The Formula 2 parameter accepts a time-series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the intercept of the linear regression of 20-quarter net income of IBM against 20-quarter sales of IBM.</td>
<td></td>
</tr>
</tbody>
</table>

| Function Call Sample Formula | TF("IBM", "REGINTERCEPT(TF.FN.Sales(period=0FQ,sdate=0,edate=-19,frq=FQ),TF.FN.NetIncome(period=0FQ,sdate=0,edate=-20,frq=FQ))") |

### REGSLOPE (Linear Trend & Growth Rate Functions)

The Regression Slope function (REGSLOPE) returns the slope of a simple linear regression of two different data items for the same ticker. Slope quantifies the steepness of the regression line between two variables X and Y in a simple linear regression. It equals the change in Y for each unit change in X. In this case, the X variable is the data item specified in the Formula parameter, and the Y variable is the data item specified in the Formula 2 parameter.

The Formula parameter accepts a time-series data set.

The Formula 2 parameter accepts a time-series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the slope of the linear regression of 20-quarter net income of IBM against 20-quarter sales of IBM.</td>
<td></td>
</tr>
</tbody>
</table>

| Function Call Sample Formula | TF("IBM", "REGSLOPE(TF.FN.Sales(period=0FQ,sdate=0,edate=-19,frq=FQ),TF.FN.NetIncome(period=0FQ,sdate=0,edate=-20,frq=FQ))") |
REGRSQUARE  (Linear Trend & Growth Rate Functions)

The Regression R Square function (REGRSQUARE) returns the R Square of a simple linear regression of two different data items for the same ticker. R Square, also called the coefficient of determination, quantifies the proportion of variability of a specific data set that is accounted for by the statistical model. In this case, the statistical model is the simple linear regression of the data item specified in the Formula parameter against the data item specified in the identifier Formula 2 parameter.

The Formula parameter accepts a time-series data set.
The Formula 2 parameter accepts a time-series data set.

Usage example

The following function returns the R SQUARE of the linear regression of 20-quarter net income of IBM against 20-quarter sales of IBM.

| Function Call Sample Formula | TF("IBM", "REGRSQUARE(TF.FN.Sales(period=0FQ,sdate=0,edate=-19, frq=FQ),TF.FN.NetIncome(period=0FQ,sdate=0,edate=-20,frq=FQ))") |  |

REGSLOPESTD (Linear Trend & Growth Rate Functions)

The Regression Slope Standard Deviation function (REGSLOPESTD) returns the standard deviation of the slope of a simple linear regression of two different data items for the same ticker. Slope Standard Deviation quantifies the precision of the estimated slope in a linear regression. In this case, the linear regression is the simple linear regression of the data item specified in the Formula parameter against the data item specified in the Formula 2 parameter.

The Formula parameter accepts a time-series data set.
The Formula 2 parameter accepts a time-series data set.

Usage example

The following function returns the standard deviation of slope of the linear regression of 20-quarter net income of IBM against 20-quarter sales of IBM.

| Function Call Sample Formula | TF("IBM", "REGSLOPESTD(TF.FN.Sales(period=0FQ,sdate=0,edate=-19,frq=FQ),TF.FN.NetIncome(period=0FQ,sdate=0,edate=-20,frq=FQ))") |  |
**REGSTDERR (Linear Trend & Growth Rate Functions)**

The Regression Standard Error function (RSTDERR) returns the standard error of a simple linear regression of two different data items for the same ticker. Standard error quantifies the accuracy to expect from a statistical model. In this case, the statistical model is the simple linear regression of the data item specified in the Formula parameter against the data item specified in the Formula 2 parameter.

The Formula parameter accepts a time-series data set.

The Formula 2 parameter accepts a time-series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the standard error of the linear regression of 20-quarter net income of IBM against 20-quarter sales of IBM.</td>
<td>TF(&quot;IBM&quot;, &quot;REGSTDERR(TF.FN.Sales(period=0FQ,sdate=0,edate=-19,frq=FQ),TF.FN.NetIncome(period=0FQ,sdate=0,edate=-20,frq=FQ))&quot;)</td>
</tr>
</tbody>
</table>

**RINTERCEPT (Linear Trend & Growth Rate Functions)**

The Relative Intercept function (RINTERCEPT) returns the intercept of a simple linear regression of a specific data set for a ticker against the same data set for another ticker. Intercept is the value of variable Y when variable X is zero in a simple linear regression. In this case, the Y variable is the data item for a ticker specified in the Formula parameter, and the X variable is the same item for the ticker specified in the Identifier parameter.

The Identifier parameter accepts a ticker.

The Formula parameter accepts a time-series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the intercept of the linear regression of 200-day price percent change of IBM against 200-day price percent change of S&amp;P 500.</td>
<td>TF(&quot;IBM&quot;, &quot;RINTERCEPT(&quot;SPX&quot;,TF.PR.PriceClose(sdate=0,edate=-199,frq=d))&quot;)</td>
</tr>
</tbody>
</table>

**RRSQUARE (Linear Trend & Growth Rate Functions)**

The Relative R Square function (RRSQUARE) returns the R Square of a simple linear regression of a specific data set for a ticker against the same data set for another ticker. R Square, also called the coefficient of determination, quantifies the proportion of variability of a specific data set that's accounted for by the statistical model. In this case, the statistical model is the simple linear regression of the data item for a ticker specified in the Formula parameter against the same item for the ticker specified in the Identifier parameter.

The Identifier parameter accepts a ticker.

The Formula parameter accepts a time-series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the R Square of the linear regression of 200-day price percent change of IBM against 200-day price percent change of S&amp;P 500.</td>
<td>TF(&quot;IBM&quot;, &quot;RRSQUARE(&quot;SPX&quot;,TF.PR.PriceClose(sdate=0,edate=-199,frq=d))&quot;)</td>
</tr>
</tbody>
</table>
### Usage example

The following function returns the R Square of the linear regression of 200-day price percent change of IBM against 200-day price percent change of S&P 500.

| Function Call Sample Formula | TF("IBM", "RRSQUARE("SPX",TF.PR.PriceClose(sdate=0,edate=-199,frq=d))") |

### RSLOPE (Linear Trend & Growth Rate Functions)

The Relative Slope function (RSLOPE) returns the slope of a simple linear regression of a specific data set of a ticker against the same data set of another ticker. Slope quantifies the steepness of the regression line between two variables X and Y in a simple linear regression. It equals the change in Y for each unit change in X. In this case, the Y variable is the data item for a ticker specified in the Formula parameter, and the X variable is the same item for the tickers specified in the Identifier parameter.

The Identifier parameter accepts a ticker.

The Formula parameter accepts a time-series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the slope of the linear regression of 200-day price percent change of IBM against 200-day price percent change of S&amp;P 500, which can also be called Beta.</td>
<td></td>
</tr>
</tbody>
</table>

| Function Call Sample Formula | TF("IBM", "RSLOPE("SPX",TF.PR.PriceClose(sdate=0,edate=-199,frq=d))") |

### RSLOPESTD (Linear Trend & Growth Rate Functions)

The Relative Slope Standard Deviation function (RSLOPESTD) returns the standard deviation of the slope of a linear regression of a specific data set for a ticker against the same data set for another ticker. Slope Standard Deviation quantifies the precision of the estimated slope in a linear regression. In this case, the linear regression is the simple regression of the data item for a ticker specified in the Formula parameter against the same item for the ticker specified in the Identifier parameter.

The Identifier parameter accepts a ticker.

The Formula parameter accepts a time-series data set.

<table>
<thead>
<tr>
<th>Usage example</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns the standard deviation of the slope of the linear regression of 200-day price percent change of IBM against 200-day price percent change of S&amp;P 500.</td>
<td></td>
</tr>
</tbody>
</table>
RSQUARE (Linear Trend & Growth Rate Functions)

The R Square function (RSQUARE) returns the R Square of a simple linear regression of a specific data set against time. R Square, also called the coefficient of determination, quantifies the proportion of variability of a specific data set that's accounted for by the statistical model. In this case, the statistical model is the simple linear regression of the data set specified in the Formula parameter against time.

The Formula parameter accepts a time-series data set.

Usage example

The following function returns the R Square of the linear regression of 200-day price of IBM against time.

Function Call Sample Formula

```
TF("IBM", "RSQUARE(TF.PR.PriceClose(sdate=0, edate=-199, frq=D))")
```

RSTDERR (Linear Trend & Growth Rate Functions)

The Relative Standard Error function (RSTDERR) returns the standard error of a simple linear regression of a specific data set for a ticker against the same data set for another ticker. Standard error quantifies the accuracy to expect from a statistical model. In this case, the statistical model is the simple linear regression of the data set for a ticker specified in the Formula parameter against the same item for the ticker specified in the Identifier parameter.

The Identifier parameter accepts a ticker.

The Formula parameter accepts a time-series data set.

Usage example

The following function returns the standard error of the linear regression of 200-day price percent change of IBM against 200-day price percent change of S&P 500.

Function Call Sample Formula

```
TF("IBM", "RSTDERR("SPX", TF.PR.PriceClose(sdate=0, edate=-199, frq=d))")
```

SLOPE (Linear Trend & Growth Rate Functions)

The Slope function (SLOPE) returns the slope of a simple linear regression of a specific data set against time. Slope quantifies the steepness of the regression line between two variables X and Y in a simple linear regression. It equals the change in Y for each unit change in X. In this case, the Y variable is the data item specified in the Formula parameter, and the X variable is time.

The Formula parameter accepts a time-series data set.
Usage example

The following function returns the slope of the linear regression of 200-day price of IBM against time.

| Function Call Sample Formula | TF("IBM", "SLOPE(TF.PR.PriceClose(sdate=0,edate=-199,frq=D))") |

SLOPESTD (Linear Trend & Growth Rate Functions)

The Slope Standard Deviation function (SLOPESTD) returns the standard deviation of the slope of a simple linear regression of a specific data set against time. Slope standard deviation quantifies the precision of the estimated slope in a linear regression. In this case, the linear regression is the simple linear regression of the data item specified in the Formula parameter against time.

The Formula parameter accepts a time-series data set.

Usage example

The following function returns the standard deviation of the slope of the linear regression of 200-day price of IBM against time.

| Function Call Sample Formula | TF("IBM", "SLOPESTD(TF.PR.PriceClose(sdate=0,edate=-199,frq=D))") |

STDERR (Linear Trend & Growth Rate Functions)

The Standard Error function (STDERR) returns the standard error of a simple linear regression of a specific data set against time. Standard error quantifies the accuracy to expect from a statistical model. In this case, the statistical model is the simple linear regression of the data set specified in the Formula parameter against time.

The Formula parameter accepts a time-series data set.

Usage example

The following function returns the standard error of the linear regression of 200-day price of IBM against time.

| Function Call Sample Formula | TF("ibm", "STDERR(TF.PR.PriceClose(sdate=0,edate=-199,frq=D))") |

Logical Functions

Logical functions return logical (True or False) values.

AND (see "AND (Logical Functions)" on page 88) (aggregates values)

IF (see "IF (Logical Functions)" on page 88) (if the value from fx2 is less than or greater than 0, then fx2, else fx3 [fx2 and fx3 can be literals])

OR (see "OR (Logical Functions)" on page 88) (refers to both operators)
XOR (see "XOR (Logical Functions)" on page 88) (operates only if one of two values matches)

**AND (Logical Functions)**

The And function (AND) checks if both boolean input expressions are true, returning a "1" if true (both true) or "0" if false (at least one is false).

The Any Bool 1 parameter is a boolean expression.

The Any Bool 2 parameter is a boolean expression.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function returns a &quot;1&quot; (1=True) in evaluating if ticker IBM has MarketCap greater than 1 billion AND less than 999 billion.</td>
</tr>
</tbody>
</table>

| Function Call Sample Formula | TF("IBM","AND( TF.PR.MarketCap(scale=9)>1, TF.PR.MarketCap(scale=9)<999 ) ") |

**IF (Logical Functions)**

The If function (IF) checks a boolean input and provides ability to evaluate two separate expressions conditionally, one expression if true and another expression if false.

The Condition parameter is a boolean expression.

The True Result parameter is expression to evaluate if boolean input is true.

**OR (Logical Functions)**

The OR function returns a value of 0 (false) if the two conditions you include in the function both return a value of 0 (false).

F(x): OR(fx1, fx2)
- or -
F(x): (fx1)OR(fx2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx1</td>
<td>function or list</td>
<td>The first of two functions or lists that you are ascertaining to be true or false</td>
</tr>
<tr>
<td>fx2</td>
<td>function or list</td>
<td>The first of two functions or lists that you are ascertaining to be true or false</td>
</tr>
</tbody>
</table>

**XOR (Logical Functions)**

The XOR function returns a value of 1 (true) if one of the conditions you include in the function returns a value of 1 and the other returns a value of 0 (false).

F(x): XOR(fx1, fx2)
- or -
F(x): (fx1)XOR(fx2)
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx1</td>
<td>function or list</td>
<td>The first of two functions or lists that you are ascertaining to be true or false</td>
</tr>
<tr>
<td>fx2</td>
<td>function or list</td>
<td>The first of two functions or lists that you are ascertaining to be true or false</td>
</tr>
</tbody>
</table>

**Mathematical Functions**

Mathematical functions return the value of common mathematical functions.

**ABS** (see "ABS (Mathematical Functions)" on page 89) (absolute value)

**ACOS** (see "ACOS (Mathematical Functions)" on page 90) (arcosine)

**ASIN** (see "ASIN (Mathematical Functions)" on page 90) (arcsine)

**ATAN** (see "ATAN (Mathematical Functions)" on page 90) (arctangent)

**CEILING** (see "CEILING (Mathematical Functions)" on page 91) (ceiling)

**COS** (see "COS (Mathematical Functions)" on page 91) (cosine)

**EXP** (see "EXP (Mathematical Functions)" on page 91) (the exponent of the number)

**FLOOR** (see "FLOOR (Mathematical Functions)" on page 91) (floor)

**FRAC** (see "FRAC (Mathematical Functions)" on page 92) (the fractional part of the number)

**INT** (see "INT (Mathematical Functions)" on page 92) (the integer part of the number)

**LN** (see "LN (Mathematical Functions)" on page 92) (natural logarithm)

**LOG** (see "LOG (Mathematical Functions)" on page 92) (base 10 logarithm)

**PERCENT_CHG** (see "PERCENT_CHG (Mathematical Functions)" on page 93) (percent change)

**POW** (see "POW (Mathematical Functions)" on page 93) (raises fx to the power of a number)

**SIN** (see "SIN (Mathematical Functions)" on page 93) (sine)

**SQRT** (see "SQRT (Mathematical Functions)" on page 94) (square root)

**TAN** (see "TAN (Mathematical Functions)" on page 94) (tangent of an angle)

**ABS (Mathematical Functions)**

The ABS function returns the absolute value of a number. You must supply a number that is less than 2,147,483,647. The absolute value, or modulus, of a real number is its numerical value without regard to its sign. For example, 3 is the absolute value of both 3 and −3. This function returns the absolute value of a single point or time series array.

Acceptable parameters include numbers, integers and fractions, and expressions.

**Usage example**

The function below returns the 52-week absolute total return for Microsoft.
ACOS (Mathematical Functions)

The ACOS function returns the arc cosine of a number in radians between 0 and pi. The arccosine is the angle whose cosine is the number you choose. To convert the result from radians to degrees, multiply it by $180/\pi$.

Acceptable parameters include numbers, integers and fractions, and expressions.

**Usage example**

You can use this function to calculate the arc cosine of 7.6 which will be between 0 and Pi. The function below returns the arc cosine for 7.6.

| Function Call Sample Formula | =TF("aa", "ACOS(7.6)") |

ASIN (Mathematical Functions)

The ASIN function returns the arcsine, or inverse sine, of a number.

The arcsine is the angle whose sine is a number. The returned angle displays in radians in the range $-\pi/2$ to $\pi/2$.

Acceptable parameters include numbers, integers and fractions, and expressions.

**Usage example**

You can use this function to calculate the inverse sine of a number in radians. The function below returns the arc sine for 7.6.

| Function Call Sample Formula | =TF("aa", "ASIN(7.6)") |

ATAN (Mathematical Functions)

The ATAN function returns the arctangent (inverse tangent) of an angle in radians between $-\pi/2$ and $\pi/2$.

Acceptable parameters include numbers, integers and fractions, and expressions.

**Usage example**

The function below returns the arc tan for 7.6.

| Function Call Sample Formula | =TF("aa", "ATAN(7.6)") |
### CEILING (Mathematical Functions)

The CEILING function returns the next integer value that is greater than or equal to a specified number. Acceptable parameters include numbers, integers and fractions, and expressions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The function below returns the next integer that is greater or equal to the specified number. In this case it brings back the next integer greater than the highest price over the last 52 weeks.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>=TF(&quot;AA&quot;, &quot;CEILING(TF.PR.PriceHighOverRange(sdate=0d,edate=-52aw,))&quot;)</td>
</tr>
</tbody>
</table>

### COS (Mathematical Functions)

The COS function returns the cosine of an angle in radians. Acceptable parameters include numbers, integers and fractions, and expressions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The function below returns cosine of 7.6.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>=TF(&quot;aa&quot;, &quot;COS(7.6)&quot;)</td>
</tr>
</tbody>
</table>

### EXP (Mathematical Functions)

The EXP function returns the natural log base (e) raised to the number power. Acceptable parameters include numbers, integers and fractions, and expressions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The function below returns the natural log to the power of 7.6.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>=TF(&quot;aa&quot;, &quot;EXP(7.6)&quot;)</td>
</tr>
</tbody>
</table>

### FLOOR (Mathematical Functions)

The FLOOR function returns the next integer value that is less than or equal to a specified number. Acceptable parameters include numbers, integers and fractions, and expressions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The function below returns the next integer that is less than or equal to the specified number. In this case, it brings back the next integer less than 7.6.</td>
</tr>
</tbody>
</table>
Function Call Sample Formula: \( =\text{TF("aa", "FLOOR(7.6)")}) \\

**FRAC (Mathematical Functions)**

The FRAC function returns the fractional part of a number. Acceptable parameters include numbers, integers and fractions, and expressions.

**Usage example**

The function below returns the fractional part of the number 7.6.

**Function Call Sample Formula**: \( =\text{TF("aa", "FRAC(7.6)")}) \\

**INT (Mathematical Functions)**

The INT function returns the integer portion of a number. This function floors the number to the integer value that is less than or equal to the specified number and removes the decimals. Acceptable parameters include numbers, integers and fractions, and expressions.

**Usage example**

The function below returns the integer part of the number 7.6.

**Function Call Sample Formula**: \( =\text{TF("aa", "INT(7.6)")}) \\

**LN (Mathematical Functions)**

The LN function returns the natural logarithm of a number. Acceptable parameters include numbers, integers and fractions, and expressions.

**F(x): LN(number)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>number</td>
<td>the natural logarithm of the number</td>
</tr>
</tbody>
</table>

**Usage example**

The function below returns the natural logarithm of the number 7.6.

**Function Call Sample Formula**: \( =\text{TF("aa", "LN(6.6)")}) \\


LOG (Mathematical Functions)

The LOG function returns the base 10 logarithm of a number.

\[ F(x): \text{LOG}(\text{number}) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>number</td>
<td>number</td>
<td>the logarithm value to the base you specify</td>
</tr>
</tbody>
</table>

PERCENT_CHG (Mathematical Functions)

You can use this function to calculate the percentage change in price between two periods (for example, YTD). Acceptable parameters include numbers, integers and fractions, and expressions.

Usage example

This formula returns the percent change for the price of Dell from the most recent price to 1/1/2007.

Function Call Sample Formula

\[ =\text{TF("DELL", "PERCENT_CHG(TF.PR.PriceClose(sdate=0),TF.PR.PriceClose(sdate=20070101))")} \]

POW (Mathematical Functions)

The POW function returns the result of a number raised to a power. Acceptable parameters include numbers, integers and fractions, and expressions.

Usage example

This function returns sales for IBM squared.

Function Call Sample Formula

\[ =\text{TF("IBM", "POW(TF.FN.Sales(),2)")} \]

SIN (Mathematical Functions)

The SIN function returns the sine of an angle in radians. Acceptable parameters include numbers, integers and fractions, and expressions.
### Usage example

This expression returns the SINE of IBM's sale.

**Function Call Sample Formula**

=TF(“IBM”, “SIN(TF.FN.Sales())”)

### SQRT (Mathematical Functions)

The SQRT function returns the square root of a number.

Acceptable parameters include numbers, integers and fractions, and expressions.

**Usage example**

This expression will return the square root of IBM's sale.

**Function Call Sample Formula**

=TF(“IBM”, “SQRT(TF.FN.Sales())”)

### TAN (Mathematical Functions)

The TAN function returns the tangent of an angle in radians.

Acceptable parameters include numbers, integers and fractions, and expressions.

**Usage example**

This expression returns the Tangent of IBM's sale.

**Function Call Sample Formula**

=TF(“IBM”, “TAN(TF.FN.Sales())”)

### Relative and Value Functions

Relative and Value functions return the indicated values for the specified identifiers.

- INDEX (see "INDEX (Relative & Value Functions)" on page 95) (converts time series data to be based to an index base value)
- INDEXTD (see "INDEXTD (Relative & Value Functions)" on page 95) (converts a time series array of values to a cumulative percent change basis)
- REL (see "REL (Relative & Value Functions)" on page 95) (returns the function value relative to the symbol)
- RELTD (see "RELTD (Relative & Value Functions)" on page 96) (converts a time series array of values to a cumulative percent change basis, relative to a specified identifier)
RELX (see "RELX (Relative & Value Functions)" on page 96) (returns the function value relative to the symbol returned from symbol_fx)

VALUE (see "VALUE (Relative & Value Functions)" on page 96) (returns the function value run for the symbol)

VALUEX (see "VALUEX (Relative & Value Functions)" on page 97) (returns the function value run for the symbol returned from symbol_fx)

INDEX (Relative & Value Functions)

The INDEX function converts time series data to be based to a specified index base value at the start date.

Acceptable parameters include numbers, integers and fractions, and expressions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>You can use this function to calculate a time series of cumulative year-to-date price changes based to 100. This function returns the time series in an indexed series starting from 100.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>=INDEX(TF.PR.PriceClose(sdate=0d, edate=-10d, frq=d), 100)</td>
</tr>
</tbody>
</table>

INDEXTD (Relative & Value Functions)

The INDXTD function converts a time series array of values to a cumulative percent change basis, beginning at zero, on the start date.

Acceptable parameters include numbers, integers and fractions, and expressions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>You can use this function to calculate a time series of cumulative year-to-date price percent changes for a security.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>INDEXTD(TF.PR.PriceClose(sdate=0CY, edate=0D, frq=D))</td>
</tr>
</tbody>
</table>

REL (Relative & Value Functions)

The REL function returns the value of fx relative to the symbol. This function allows you to compare your security (for example, IBM) to another security (for example, GOOG).

Acceptable parameters include numbers, integers and fractions, and expressions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>This formula returns the relative value of IBM sales to MSFT sales.</td>
</tr>
</tbody>
</table>
Function Call Sample Formula

=TF("IBM", "REL(msft,T.FN.Sales())")

### RELTD (Relative & Value Functions)

The RELATIVE TO DATE function converts a time series array of values to a cumulative percent change basis, beginning at zero on the start date, and relative to a specified identifier.

**F(x): RELTD(base_identifier, number_array)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>identifier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>number_array</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to calculate a time series of cumulative year-to-date price percent changes for a security, relative to Microsoft.

Function Call Sample Formula

RELTD(MSFT-O, TF.PR.PriceClose(sdate=0CY, edate=0D, frq=D))

### RELX (Relative & Value Functions)

The RELX function returns the value of fx relative to the symbol returned from symbol fx (symbol fx must be a symbol-returning fx). This function allows you to compare your security (for example, IBM) to a list of symbols (for example, DELL, GOOG, CSCO).

**F(x): RELX(symbolFx, fx)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>symbolFx</td>
<td>symbol</td>
<td>the symbol the function value relates to</td>
</tr>
<tr>
<td>fx</td>
<td>function</td>
<td>function</td>
</tr>
</tbody>
</table>

### VALUE (Relative & Value Functions)

The VALUE function returns the value of fx run for the symbol. This function returns a value for a specific symbol for a function f(x). This is useful for comparisons to other symbols.

Acceptable parameters include numbers, integers and fractions, and expressions.
VALUEX (Relative & Value Functions)
The VALUEX function returns the value of \( fx \) run for the symbol returned from symbol \( fx \) (symbol \( fx \) must be a symbol-returning function). This function returns the value for a list of symbols for a function \( f(x) \).
Acceptable parameters include numbers, integers and fractions, and expressions.

Sorting Functions
Sorting functions return sorted arrays of data.

**SORT_ASCEND** (see "SORT_ASCEND (Miscellaneous Functions)" on page 97) (sort ascending)

**SORT_DESCEND** (see "SORT_DESCEND (Miscellaneous Functions)" on page 97) (sort descending)

**SORT_INDIRECT_ASCEND** (see "SORT_INDIRECT_ASCEND (Miscellaneous Functions)" on page 97) (sort based on order of first function [ascending])

**SORT_INDIRECT_DESCEND** (see "SORT_INDIRECT_DESCEND (Miscellaneous Functions)" on page 98) (sort based on order of first function [descending])

**SORT_ASCEND** (Miscellaneous Functions)
**SORT_ASCEND** sorts the results of the specified data source in ascending order.

\[ F(x): \text{SORT_ASCEND}(fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( fx )</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**SORT_DESCEND** (Miscellaneous Functions)
**SORT_DESCEND** sorts the results of the specified data source in descending order.

\[ F(x): \text{SORT_DESCEND}(fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( fx )</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**SORT_INDIRECT_ASCEND** (Miscellaneous Functions)
The **SORT_INDIRECT_ASCEND** function determines the ascending order of \( fx2 \) and then puts \( fx1 \) in that order.

\[ F(x): \text{SORT_INDIRECT_ASCEND}(fx1, fx2) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( fx1 )</td>
<td>source</td>
<td>function or list</td>
</tr>
<tr>
<td>( fx2 )</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>
SORT_INDIRECT_DESCEND (Miscellaneous Functions)

SORT_INDIRECT_DESCEND determines the descending order of fx2 and then puts fx1 in that order.

F(x): SORT_INDIRECT_DESCEND(fx1, fx2)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx1</td>
<td>source</td>
<td>function or list</td>
</tr>
<tr>
<td>fx2</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

Statistical Functions

Statistical functions return the value of a statistical computation on a range of values.

AVG (see "AVG (Same as MEAN) (Statistical Functions)" on page 99) (average of fx)
COUNT (see "COUNT (Statistical Functions)" on page 99) (non-null values of count)
DOWN_SEQ (see "DOWN_SEQ (Statistical Functions)" on page 99) (down sequence)
EXPSMOOTH (see "EXPSMOOTH (Statistical Functions)" on page 99) (exponential smoothing)
GMEAN (see "GMEAN (Statistical Functions)" on page 100) (geometric mean)
HAVG (see "HAVG (Statistical Functions)" on page 100) (harmonic mean)
MAX (see "MAX (Statistical Functions)" on page 100) (maximum)
MAX_INDEX (see "MAX_INDEX (Statistical Functions)" on page 101) (index of the maximum value)
MEDIAN (see "MEDIAN (Statistical Functions)" on page 101) (median)
MIN (see "MIN (Statistical Functions)" on page 101) (minimum)
MIN_INDEX (see "MIN_INDEX (Statistical Functions)" on page 102) (index of the minimum value)
RSI (see "RSI (Statistical Functions)" on page 102) (Relative Strength Index)
STD (see "STD (Statistical Functions)" on page 102) (standard deviation)
STDP (see "STDP (Statistical Functions)" on page 103) (standard deviation of population)
SUM (see "SUM (Statistical Functions)" on page 103) (sum)
UP_SEQ (see "UP_SEQ (Statistical Functions)" on page 103) (up sequence)
VAR (see "VAR (Statistical Functions)" on page 104) (variance)
VARP (see "VARP (Statistical Functions)" on page 104) (variance population)
WAVG (see "WAVG (Statistical Functions)" on page 104) (weighted average)
WGMEAN (see "WGMEAN (Statistical Functions)" on page 105) (weighted geometric mean)
WHAVG (see "WHAVG (Statistical Functions)" on page 105) (weighted harmonic mean)
WMEDIAN (see "WMEDIAN (Statistical Functions)" on page 106) (weighted median)
WSTD (see "WSTD (Statistical Functions)" on page 106) (weighted standard deviation)
WSTDP (see "WSTDP (Statistical Functions)" on page 107) (weighted standard deviation of population)
WVAR (see "WVAR (Statistical Functions)" on page 107) (weighted variance)
WVARP (see "WVARP (Statistical Functions)" on page 107) (weighted variance of the population)
AVG (Same as MEAN) (Statistical Functions)

The AVG function returns the average, or arithmetic mean, of the values in the function. The Number List parameter accepts any array function.

**Usage example**

The following function returns the average Closing Price over the last 50 days for the ticker IBM.

| Function Call Sample Formula | TF("IBM", "AVG(TF.PR.PriceClose(sdate=0,edate=-49,frq=D))") |

**COUNT (Statistical Functions)**

The COUNT function counts the number of non-null values in the function.

**Usage example**

The following function counts the number of years of annual revenue data available for IBM within the past 20 years.

| Function Call Sample Formula | TF("IBM", "COUNT(TF.FN.Sales(period=FY0,,sdate=0,edate=-19,frq=FY))") |

**DOWN_SEQ (Statistical Functions)**

The Down Sequence function (DOWN_SEQ) returns a 1 if the value is less than its previous value. Otherwise, it returns a 0.

The Formula parameter accepts a time-series data set.

**Usage example**

The following function returns a series of 20 values that populate as either 1 or 0, depending on whether the price close is less than its previous value or not.

| Function Call Sample Formula | TF("IBM", "DOWN_SEQ(TF.PR.PriceClose(sdate=0,edate=-19,frq=D))") |

**EXPSMOOTH (Statistical Functions)**

The Exponential Smooth (EXPSMOOTH) function returns an exponentially weighted moving average of a time series “smoothed” by a factor of “n.” The factor should be between 0 and 1. The higher factor gives greater weight to historical data points.

The Factor parameter accepts any number “n” between 0 and 1.

The Formula parameter accepts a time-series data set.
### Usage example

The following function returns a value that is the exponential smoothing of the price closes for IBM over 20 days by a factor of .5.

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>TF(&quot;IBM&quot;, &quot;EXPSMOOTH(.5,TF.PR.PriceClose(sdate=0,edate=-19,frq=D))&quot;)&quot;</code></td>
</tr>
</tbody>
</table>

### GMEAN (Statistical Functions)

The Geometric Mean function (GMEAN) returns the geometric mean of an array or range of positive numeric data. The numbers are multiplied and then the $n$th root is taken.

The Any Number 1 parameter accepts any number less than $2,147,483,647$.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>This function returns the compound annual asset return from 10 years of annual revenues for IBM.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>TF(&quot;IBM&quot;, &quot;GMEAN(TF.PR.PricePchg(sdate=0,edate=-9,frq=d))&quot;)&quot;)</code></td>
</tr>
</tbody>
</table>

### HAVG (Statistical Functions)

The Harmonic Average function (HAVG) returns the harmonic mean of a data set of positive numbers: the reciprocal of the arithmetic mean of reciprocals. You can include up to 30 arguments for this calculation.

The Any Number 1 parameter accepts any number less than $2,147,483,647$.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>This function returns the harmonic mean from 10 years of annual revenues for IBM.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>TF(&quot;IBM&quot;, &quot;HAVG(TF.FN.Sales(period=FY0, sdate=0,edate=-9,frq=FY))&quot;)&quot;</code></td>
</tr>
</tbody>
</table>

### MAX (Statistical Functions)

The Maximum function (MAX) returns the largest value in the function.

The Number List parameter accepts any array formula.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>This function returns the highest revenue from Sales over 10 years for IBM.</td>
</tr>
</tbody>
</table>
MAX_INDEX (Statistical Functions)

The Maximum Index function (MAX_INDEX) returns the position of the largest number within a set of values. The Formula parameter accepts a time-series data set.

**Usage example**

This function returns the highest revenue from Sales over 10 years for IBM.

**Function Call Sample Formula**

```
TF("IBM", " MAX(TF.FN.Sales(period=FY0, sdate=0, edate=-9, frq=FY))")
```

MEDIAN (Statistical Functions)

The MEDIAN function returns the median, the number in the middle, or the average of the middle two values.

\[ F(x): MEDIAN(fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to find the middle value of sales revenue over a given time period. (Half of the P/Es are above this number, and half are below.)

**Function Call Sample Formula**

```
TF("IBM", "MEDIAN(TF.FN.Sales(period=FY0, rollPeriods=1, sdate=-8, edate=0, frq=Y))")
```

MIN (Statistical Functions)

The MIN function returns the minimum value in the function.

\[ F(x): MIN(fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>
Usage example

You can use this function to find the lowest Price-to-Earnings ratio over a given time period.

Function Call Sample Formula

```
TF("IBM", "MIN(TF.FN.PERatioClose(period=FY0,rollPeriods=1,sdate=-8,edate=0,frq=Y))")
```

MIN_INDEX (Statistical Functions)

The MIN_INDEX function returns the position in the time-series of the minimum value.

F(x): MIN_INDEX(fx)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

RSI (Statistical Functions)

The RSI function returns the Relative Strength Index of the function, calculated by using simple averages of up and down moves over a specified number of periods.

RSI = 100*up_average/(up_average + down_average).

F(x): RSI(fx)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

STD (Statistical Functions)

The STD function returns the standard deviation of the selected cells. The standard deviation measures the variability of data in a sample, as opposed to a population. (See STDP (see "STDP (Statistical Functions)" on page 103).)

STD is not the weighted standard deviation. For information on the weighted standard deviation, see WSTD (see "WSTD (Statistical Functions)" on page 106).

F(x): STD(fx)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

Usage example

You can use this function to find the standard deviation of a stock's price return, based on a sample.
Function Call Sample Formula | TF("IBM", "STDP(TF.PR.PriceClose(sdate=0, edate=-40, frq=D))")

STDP (Statistical Functions)

The STDP function returns the standard deviation, or variability of data, on a population, as opposed to a sample. (See STD (see "STD (Statistical Functions)" on page 102.)

F(x): STDP(fx)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

Usage example

You can use this function to calculate the standard deviation of a stock's price return, based on the entire population.

Function Call Sample Formula | TF("IBM", "STDP(TF.PR.PriceClose(sdate=0, edate=-40, frq=D))")

SUM (Statistical Functions)

The SUM function adds the values in the function and returns the total.

F(x): SUM(fx)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

Usage example

You can use this function to calculate a full year's EPS from the individual quarter's EPS figures.

Function Call Sample Formula | TF("IBM", "SUM(TF.ES.EPS.Mean(period=0FQ, rollPeriods=1, sdate=-3, edate=0, frq=Q))")

UP_SEQ (Statistical Functions)

The UP_SEQ function returns a number of values that are greater than their previous values.

F(x): UP_SEQ(fx)
### VAR (Statistical Functions)

The VAR function returns the variance of the array of values.

**F(x): VAR(fx)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to calculate the variance of a stock's price return, based on a sample.

**Function Call Sample Formula**

```
TF("IBM", "VAR(TF.PR.PriceClose(sdate=0,edate=-40,frq=D))")
```

### VARP (Statistical Functions)

The VARP function calculates the variance of population.

**F(x): VARP(fx)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to calculate the variance of a stock's price return, based on the entire population.

**Function Call Sample Formula**

```
TF("IBM", "VARP(TF.PR.PriceClose(sdate=0,edate=-40,frq=D))")
```

### WAVG (Statistical Functions)

The WAVG function returns the weighted moving average for a company.

**F(x): WAVG(weight_fx, fx)**
**Parameter** | **Type**     | **Description**  
---|---|---
weight_fx | weighting | function or list  
fx | source | function or list  

**WGMEAN (Statistical Functions)**

The WGMEAN function returns the weighted geometric mean of the values in the function.

\[ F(x) : WGMEAN(weight\_fx, fx) \]
WHAVG (Statistical Functions)

The WHAVG function returns the weighted harmonic mean. The harmonic mean is the reciprocal of the average of the reciprocal values of all elements in a set.

\[ F(x) : WHAVG(weight\_fx, fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>weight_fx</td>
<td>weighting</td>
<td>function or list</td>
</tr>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to calculate volume weighted harmonic average price over a span of any number of days.

**Function Call Sample Formula**

```
TF("IBM", "WHAVG(TF.PR.VolumeDaily(sdate=0,edate=-20,frq=D),TF.PR.PriceClose(sdate=0,edate=-20,frq=D))")
```

WMEDIAN (Statistical Functions)

The WMEDIAN function returns the weighted median of the function.

\[ F(x) : WMEDIAN(weight\_fx, fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>weight_fx</td>
<td>weighting source</td>
<td>function or list</td>
</tr>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to calculate volume weighted median price over a span of any number of days.

**Function Call Sample Formula**

```
TF("IBM", "WMEDIAN(TF.PR.VolumeDaily(sdate=0,edate=-50,frq=D),TF.PR.PriceClose(sdate=0,edate=-50,frq=D))", "cleanup=1;datadir=down")
```

WSTD (Statistical Functions)

The WSTD function returns the weighted standard deviation of the function.

\[ F(x) : WSTD(fx) \]
F(x): WSTD(weight_fx, fx)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>weight_fx</td>
<td>weighting source</td>
<td>function or list</td>
</tr>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to calculate the weighted standard deviation of a stock's price return, based on a sample.

**Function Call Sample Formula**

```
TF("IBM", "WSTD(TF.PR.VolumeDaily(sdate=0,edate=-20,frq=D),TF.PR.PriceClose(sdate=0,edate=-20,frq=D))")
```

**WVARP (Statistical Functions)**

The WVARP function returns a weighted variance of population.

F(x): WVARP(WEIGHT fx, fx)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>weight_fx</td>
<td>weighting source</td>
<td>function or list</td>
</tr>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to calculate the weighted variance of a stock's price return, based on the entire population.

**Function Call Sample Formula**

```
TF("IBM", "WVARP(TF.PR.VolumeDaily(sdate=0,edate=-20,frq=D),TF.PR.PriceClose(sdate=0,edate=-20,frq=D))")
```

**WSTDP (Statistical Functions)**

The WSTDP function returns the weighted standard deviation of population.

F(x): WSTDP(weight_fx, fx)
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>weight_fx</td>
<td>weighting source</td>
<td>function or list</td>
</tr>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to calculate the weighted standard deviation of a stock's price return, based on the entire population.

**Function Call Sample Formula**

```
TF("MSFT", "WSTDP(TF.PR.VolumeDaily(sdate=0,edate=-20,frq=D),TF.PR.PriceClose(sdate=0,edate=-20,frq=D))", "cleanup=1;datadir=down")
```

**WVAR (Statistical Functions)**

The WVAR function returns a weighted variance.

\[ F(x) = \text{WVAR}(\text{weight}_fx, fx) \]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>weight_fx</td>
<td>weighting source</td>
<td>function or list</td>
</tr>
<tr>
<td>fx</td>
<td>source</td>
<td>function or list</td>
</tr>
</tbody>
</table>

**Usage example**

You can use this function to calculate the weighted variance of a stock's price return, based on a sample.

**Function Call Sample Formula**

```
TF("IBM", "WVAR(TF.PR.VolumeDaily(sdate=0,edate=-20,frq=D),TF.PR.PriceClose(sdate=0,edate=-20,frq=D))")
```

**String Functions**

String functions can analyze and return modifications of strings of characters.

- **CASE** (see "CASE (String Functions)" on page 109) (capitalizes the first character in each word)
- **CHARPOS** (see "CHARPOS (String Functions)" on page 109) (returns the character at the given position)
- **CONTAINS** (see "CONTAINS (String Functions)" on page 109) (returns 1 if given text is found within the string)
Chapter 8 Expression Builder

DOES_NOT_CONTAIN (see “DOES_NOT_CONTAIN (String Functions)” on page 110) (returns 1 if given text is not found within the string)

LEFT (see “LEFT (String Functions)” on page 110) (returns the left-most characters)

LOWERCASE (see “LOWERCASE (String Functions)” on page 110) (converts all letters to lowercase)

RIGHT (see “RIGHT (String Functions)” on page 110) (returns the right-most characters)

STRINGLENGTH (see “STRINGLENGTH (String Functions)” on page 111) (returns the length of the string)

SUBSTRING (see “SUBSTRING (String Functions)” on page 111) (returns part of the string)

UPPERCASE (see “UPPERCASE (String Functions)” on page 111) (converts all letters to uppercase)

CASE (String Functions)

The CASE function returns text where the first letter of each word is capitalized.
Acceptable parameters include string functions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following formula returns word with the first letter capitalized.</td>
</tr>
</tbody>
</table>

| Function Call Sample Formula | =TF("IBM", "CASE(""billy"")) |

CHARPOS (String Functions)

The CHARPOS function returns the function character position. The first character is 1.
Acceptable parameters include string functions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>This formula returns the position, 1, for the expression.</td>
</tr>
</tbody>
</table>

| Function Call Sample Formula | =TF("IBM", "CHARPOS(""23"", "2")") |

CONTAINS (String Functions)

The CONTAINS function returns 1 if text appears in the function.
Acceptable parameters include string functions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>This formula returns a &quot;1&quot; if the business description for IBM contains the word &quot;Billy.&quot;</td>
</tr>
</tbody>
</table>

| Function Call Sample Formula | =TF("IBM", "CONTAINS(""TF.FN.BusinessDescription"", "Billy"")) |
DOES_NOT_CONTAIN (String Functions)
The DOES_NOT_CONTAIN function returns 1 if text does not appear in the function.
Acceptable parameters include string functions.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>This formula returns a &quot;0&quot; if the business description for IBM contains the word &quot;Billy.&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>=TF(&quot;IBM&quot;, &quot;DOES_NOT_CONTAIN(&quot;TF.FN.BusinessDescription()&quot;, &quot;Billy&quot;)&quot;)</td>
</tr>
</tbody>
</table>

LEFT (String Functions)
The LEFT function returns the left-most number of specified characters.

F(x): LEFT(text, number)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>string</td>
<td>source string</td>
</tr>
<tr>
<td>number</td>
<td>integer</td>
<td>the number of characters to return</td>
</tr>
</tbody>
</table>

LOWERCASE (String Functions)
The Lowercase function (LOWERCASE) converts all the letters in a text string to lower case.
The Any String parameter accepts any text string.

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function converts all the letter in the text string &quot;TF.CompanyName()&quot; to lower case. In this case, it returns tf.companyname().</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF(&quot;IBM&quot;, &quot;LOWERCASE(&quot;TF.CompanyName()&quot;)&quot;)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Usage example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following function converts all the letters in the outcome from the function TF.CompanyName() to lower case. In this case, it returns international business machs.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function Call Sample Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF(&quot;IBM&quot;, &quot;LOWERCASE(TF.CompanyName())&quot;)</td>
</tr>
</tbody>
</table>

RIGHT (String Functions)
The RIGHT function returns right-most specified characters.
F(x): RIGHT(text, number)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>text</td>
<td>string</td>
<td>source string</td>
</tr>
<tr>
<td>number</td>
<td>integer</td>
<td>the number of characters to return</td>
</tr>
</tbody>
</table>

STRINGLENGTH (String Functions)

The STRINGLENGTH function returns the length of a string.
The Any String parameter accepts any text string.

SUBSTRING (String Functions)

The SUBSTRING function returns a portion of text beginning with start and ending with end (inclusively).
The Any String parameter accepts any text string.
UPPERCASE (String Functions)

The Uppercase function (UPPERCASE) converts all the letters in a text string to uppercase. The Any String parameter accepts any text string.

Usage example

The following function converts all the letters in the text string "TF.CompanyName()" to uppercase. In this case, it returns TF.COMPANYNAME().

Function Call Sample Formula

TF("IBM", "UPPERCASE(""TF.CompanyName()""))

Usage example

The following function converts all the letters in the outcome from the function TF.CompanyName() to uppercase. In this case, it returns INTERNATIONAL BUSINESS MACHS.

Function Call Sample Formula

TF("IBM", "UPPERCASE(TF.CompanyName())")

Mathematical Operators

A mathematical operator is a symbol between two inputs that performs a calculation or function.

Thomson Reuters Spreadsheet Link processes complex expressions by using parentheses and operation order. Parentheses in mathematical expressions modify the normal order. The part of the expression in the parentheses is calculated first and the result is then used in the rest of the expression. Nested parenthesis work similarly, in that they define the expression order, working from the inner-most parentheses to the outer-most parentheses.

The order of operations in Thomson Reuters Spreadsheet Link is as follows:

1: to the power
2: divide, multiply, divide with zero as negative, modulus
3: add, subtract
4: available, zero if not available
5: greater than, less than, greater than or equal to, less than or equal to, not equal to, equal to

<table>
<thead>
<tr>
<th>Operator</th>
<th>Description</th>
<th>Example</th>
<th>Definition/Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>Addition</td>
<td>A + B</td>
<td>Adds the variables</td>
</tr>
<tr>
<td>-</td>
<td>Subtraction</td>
<td>A - B</td>
<td>Subtracts the variables</td>
</tr>
<tr>
<td>*</td>
<td>Multiplication</td>
<td>A * B</td>
<td>Multiplies the variables</td>
</tr>
<tr>
<td>/</td>
<td>Division</td>
<td>A / B</td>
<td>Divides the variables</td>
</tr>
<tr>
<td>Operator</td>
<td>Description</td>
<td>Example</td>
<td>Definition/Result</td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------</td>
<td>-----------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>//</td>
<td>Division excluding negative numbers</td>
<td>A // B</td>
<td>If the denominator is negative or 0 it will return an N/A, otherwise it will return a value</td>
</tr>
<tr>
<td>%</td>
<td>Modulus</td>
<td>A % B</td>
<td>Finds the remainder of a Division (remainder of A / B)</td>
</tr>
<tr>
<td>^</td>
<td>Exponent</td>
<td>A ^ B</td>
<td>A Raised to the power of B</td>
</tr>
<tr>
<td>=</td>
<td>Equals</td>
<td>A = B</td>
<td>A equals B</td>
</tr>
<tr>
<td>&lt;</td>
<td>Less Than</td>
<td>A &lt; B</td>
<td>A is less than B</td>
</tr>
<tr>
<td>&gt;</td>
<td>Greater Than</td>
<td>A &gt; B</td>
<td>A is greater than B</td>
</tr>
<tr>
<td>&lt;=</td>
<td>Less Than or Equal to</td>
<td>A &lt;= B</td>
<td>A is less than or equal to B</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Greater Than or Equal to</td>
<td>A &gt;= B</td>
<td>A is greater than or equal to B</td>
</tr>
<tr>
<td>&lt;&gt;</td>
<td>Not Equal to</td>
<td>A &lt;&gt; B</td>
<td>A does not equal B</td>
</tr>
<tr>
<td>@</td>
<td>First Available Non-Null</td>
<td>A @ B</td>
<td>If A exists, then A. If A does not exist, then B</td>
</tr>
<tr>
<td>AND</td>
<td>AND</td>
<td>A AND B</td>
<td>Both sides of the equation must be true</td>
</tr>
<tr>
<td>OR</td>
<td>OR</td>
<td>A OR B</td>
<td>Either or both sides of the equation must be true</td>
</tr>
<tr>
<td>XOR</td>
<td>XOR</td>
<td>A XOR B</td>
<td>One and only one side of the equation must be true</td>
</tr>
<tr>
<td>!@</td>
<td>Zero, if Not Available</td>
<td>A !@ B</td>
<td>If A is Null, then 0 is returned, otherwise A is returned</td>
</tr>
<tr>
<td>==</td>
<td>Equals (Comparison Only)</td>
<td>A == B</td>
<td>If A and B are equivalent, then True (1) is returned, otherwise False (0)</td>
</tr>
<tr>
<td>&amp;</td>
<td>AND</td>
<td>A &amp; B</td>
<td>The same as the AND operator. If both sides of the equation are trues, True (1) is returned, otherwise False (0)</td>
</tr>
<tr>
<td>Operator</td>
<td>Description</td>
<td>Example</td>
<td>Definition/Result</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>---------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td>A</td>
<td>B</td>
</tr>
</tbody>
</table>
Chapter 9  Funded Portfolio Builder

You can use Thomson Reuters Spreadsheet Link’s Funded Portfolio Builder and Watchlist Builder to create, edit, and import custom funded portfolios or watchlists.

You can also look up companies to add to your portfolio or list and update ticker symbols and other company identifiers.

Create a Funded Portfolio

To create a portfolio
1. On the Thomson Reuters menu, point to Build and click Build a Funded Portfolio.
2. Click Add.
3. Type the date of the holding statement, or click  to select one, and click OK.
4. Select a Base Currency.
5. In the Holding Statements panel, click the date of the holding statement for the portfolio that you would like to create.
6. Click Click to Add Identifiers and Shares.
7. Type an identifier (for example, IBM or MSFT), and press ENTER, or look up an identifier (see "Look Up Identifiers (Funded Portfolio Builder)” on page 116).
8. Double-click the Shares cell for that identifier, and type a number of shares.
9. To re-sort, click a column header to sort by that column. Click again to reverse the order.
10. To add or delete a row, right click the row, and click New Row or Delete.
11. To delete all the constituents of a portfolio, click the date of the portfolio in the Holding Statements area, right-click, click Delete, and click Yes to confirm the deletion.
12. To save the portfolio, click , and see Save a Funded Portfolio or Watchlist (on page 117).
13. Click Close.
Look Up Identifiers (Funded Portfolio Builder)

To look up identifiers

1. Click Click to Add Identifiers and Shares.
2. Click .
3. From the keyword drop-down, make a selection.
   You cannot select Thomson Ticker in the Keyword drop-down if you are searching for an inactive company.
4. Select Starts With, Contains, or Is Exactly.
5. In the textbox, type all or part of the identifier you chose (for example, Micro or General.)
6. To include at least one advanced option, click Advanced Options.
7. To include or exclude at least one country of exchange in your search, next to Country of Exchange, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select a country. To select multiple countries, hold the CTRL key while clicking countries.
   c. Click .
   d. Click OK.
8. To include or exclude at least one country of incorporation in your search, next to Country of Incorporation, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select a country. To select multiple countries, hold the CTRL key while clicking countries.
   c. Click .
   d. Click OK.
9. To include or exclude an exchange in your search, next to Exchange, select Includes or Excludes.
   a. Click the ellipsis (...).
   b. From the left box, select an exchange. To select multiple exchanges, hold the CTRL key while clicking countries.
   c. Click .
   d. Click OK.
10. To search for active or inactive securities only, in the text box to the right of Security Status and Equals, click the ellipsis (...).
    a. Select Active or Inactive.
    b. Click OK.
11. Click Show Results.
12. If applicable, click the triangles in the Search Results box to view security and quote level information.
13. To view more information in a pop-up, select a company, right-click and click Get Information.
14. From the Export As drop-down, select a type of identifier.
15. Click OK.

Import a Funded Portfolio

To import a funded portfolio

1. On the Thomson Reuters menu, point to Build, and click Build a Funded Portfolio.
2. Click Import.
3. To import from a workbook that you have open, highlight the range of cells with the items for the import, select **Workbook Range** in the Import Portfolio dialog, click , confirm the range of cells or type \=$column letter$\row number of the starting cell of the range:$$\column letter$$\row number of the final cell of the range (for example \=$A$1:$A$58), and click again.

   To import from a saved file, select **File**, click , select the appropriate file, and click **Open**.

4. Click **Next**.

5. If importing a range, select whether to include the header row or not.

6. If importing a list from a .txt file, select a file type
   a. If selecting a delimited file type, select a delimiter and starting row.
   b. If selecting a fixed width, select a starting row.

7. Click **Next**.

8. To edit your portfolio or watchlist, use the buttons on the toolbar to include items, exclude items, or update identifiers, or click to look up an identifier (see "Look Up Identifiers (Funded Portfolio Builder)" on page 116).

9. Click **Import**.

10. To add or change the number of shares, double-click the cell in the Shares column in the row of the appropriate identifier, and type the number of shares.

11. Select a **Base Currency**.

12. To save the imported portfolio, click the date of the portfolio under Holding Statements, click , and see Save a Funded Portfolio or Watchlist (on page 117).

13. Click **Close**.

**Save a Funded Portfolio or Watchlist**

To save a funded portfolio or watchlist

1. **After creating** (see "Funded Portfolio Builder" on page 115) or **importing** (see "Import a Funded Portfolio" on page 116) a funded portfolio or **creating** (see "Create a Watchlist" on page 118) or **importing** (see "Import a Watchlist" on page 118) a watchlist, click .

2. In the **Name** box, type a name (50 characters maximum, alphanumeric characters or underscores only, no spaces).

3. To include a description, type it in the **Description** box.

4. To select a security setting, make a selection from the **Security Level** drop-down.

5. To save in a new folder, click **New Folder**, type a name, click the triangles to the left of the folders to navigate to the location of the new folder, and click the folder in which you want to save the new folder.

   To save in an existing folder, click the triangles to navigate to the location of the new folder, and click the folder in which you want to save the portfolio.

6. Click **Save**.
Chapter 10  Watchlist Builder

You can use Thomson Reuters Spreadsheet Link's Funded Portfolio Builder and Watchlist Builder to create, edit, and import custom funded portfolios or watchlists.

You can also look up companies to add to your portfolio or list and update ticker symbols and other company identifiers.

Create a Watchlist

To create a watchlist
1. On the Thomson Reuters menu, point to Build and click Build a Watchlist.
2. Click Click to Add Identifiers and Shares.
3. Type an identifier (for example, IBM or MSFT), and press ENTER, or look up an identifier (see “Look Up Identifiers (Funded Portfolio Builder)” on page 116).
4. To re-sort, click a column header to sort by that column. Click again to reverse the order.
5. To add or delete a row, right click the row, and click New Row or Delete.
6. To save the watchlist, click , and see Save a Funded Portfolio or Watchlist (on page 117).
7. Click Close.

Import a Watchlist

To import a watchlist
1. On the Thomson Reuters menu, point to Build, and click Build a Watchlist.
2. Click Import.
3. To import from a workbook that you have open, highlight the range of cells with the items for the import, select Workbook Range in the Import Portfolio dialog, click , confirm the range of cells or type =$column letter$row number of the starting cell of the range$column letter$row number of the final cell of the range (for example =$A$1:$A$58), and click again.
   To import from a saved file, select File, click , select the appropriate file, and click Open.
4. Click **Next**.
5. If importing a range, select whether to include the header row or not.
6. If importing a list from a .txt file, select a file type
   a. If selecting a delimited file type, select a delimiter and starting row.
   b. If selecting a fixed width, select a starting row.
7. Click **Next**.
8. To edit your portfolio or watchlist, use the buttons on the toolbar to include items, exclude items, or update identifiers, or click ![Look Up Identifier](image) to look up an identifier (see "Look Up Identifiers (Funded Portfolio Builder)" on page 116).
9. Click **Import**.
10. To save the watchlist, click ![Save](image) and see Save a Funded Portfolio or Watchlist (on page 117).
11. Click **Close**.
Chapter 11  Report Builder

In Report Builder, you can create multiple kinds of reports:

- Custom reports, based on one or more public and/or private company
- Ownership reports, based on a single public company
- As Reported reports, based on Reuters As Reported data items

You can export the data to a spreadsheet and apply various formats to these reports, giving them a unique look.

Custom Reports (Report Builder)

Thomson Reuters Spreadsheet Link Report Builder lets you create custom templates through creating custom reports, which apply data items you select to identifiers, an identifier or value from a cell on your spreadsheet, a saved list, or a saved screen.

You can create various types of reports using Single Period or Time Series data.

You can also apply various formats to these reports.

For your report, you can create a list of identifiers, look up an identifier, reference a cell, import a saved list, or import a saved screen.

The entity type you choose limits the available data items to those that apply to the entity type.

To create a custom report

1. On the Thomson Reuters menu, point to Build and click Build a Report.
2. Select an Entity Type.
3. Specify your identifier(s) (on page 121).
4. Select a time frame, Single Period or Time Series.
5. Select Start date, End date and Frequency information. To view date options (see "Date and Period Builder" on page 212), click the corresponding drop-downs.
6. Add data items (see "Make Data Item Selections for a Custom Report (Report Builder)" on page 123) by clicking the Add icon.
7. To change the currency for the data items, select a currency from the Currency drop-down.
8. Select a table layout in the Format section. Depending on your "Time" criteria and the number of tickers, the available format selections will change.
9. To add more formatting, click Options. For more information on formatting, see Use Format Options (see "Adjust and Apply Formats (Report Builder)" on page 132).
10. To export a report to a spreadsheet, click **Export**. To customize your export options, see Customize Your Export (see "Customize Your Export (Report Builder)" on page 132).

To create a list of known identifiers
- In the **Identifier(s)** box, type identifiers, separated by a space.

To look up identifiers
- Click `🔍` and then **Select an Identifier** (see "Look Up Identifiers" on page 122).

To reference a cell
- Click `🔍` and click **Reference a Cell** (see "Reference a Cell (Report Builder)" on page 121).

To use a saved list
- Click `🔍` and click **Import Saved List** (see "Import a List" on page 122).

To use a saved screen
- Click `🔍` and click **Import Saved Screen** (see "Import a Saved Screen" on page 122).

Reference a Cell (Report Builder)
To reference a cell
1. Click `🔍`
2. Select **Reference a Cell**.
3. On the spreadsheet, click the cell with the identifier that you want. The starting cell appears in the text box of the cell reference dialog.

4. In the cell reference dialog, click \( \text{Look Up Identifiers} \).

**Look Up Identifiers**

**To select identifiers**
1. Click \( \text{Select an Identifier} \).
2. From the adjacent drop-down, select \( \text{Starts With, Contains, or Is Exactly} \).
3. Type all or part of the identifier you chose (for example, Micro).
4. Click \( \text{Show Results} \).
5. If applicable, click the arrows in the Search Results box to view security- and quote-level information.
6. To view more information in a pop-up, select a company, right click and click \( \text{Get Information} \).
7. Click \( \text{Add} \).
8. When you are finished adding constituents, click \( \text{Close} \).

**Import a List**

**To import a list**
1. Click \( \text{Import Saved List} \).
2. From the \( \text{Search} \) drop-down, select a search type.
3. From the \( \text{Keyword} \) drop-down, select \( \text{Starts With, Contains, or Is Exactly} \).
4. Type all or part of a name in the textbox.
5. Click \( \text{Go} \).
6. Select a result from the \( \text{Search Results} \) box. The \( \text{Constituents} \) section populates based on the result item.
7. To sort results by a category other than name, click the appropriate column head. To reverse the order, click the column head again.
8. To view or hide index details or identifiers (constituent information on the right-hand side), click the corresponding buttons.
9. To start a new search, click \( \text{New Search} \).
10. Click \( \text{OK} \).

**Import a Saved Screen**

**To import a saved screen**
1. Click \( \text{Import Saved Screen} \).
2. To search for a screen by browsing, click the appropriate folder in the left pane in the \( \text{Open Screen} \) dialog.
3. To search for a screen by name, type all or part of the name in the \( \text{Search} \) box, and click the magnifying glass.
4. Click \( \text{OK} \).
**Make Data Item Selections for a Custom Report (Report Builder)**

**To make data item selections in the Custom tab of Report Builder**
1. To add data items, in the **Data Items** area, click the **Add** button.
2. From the **Category** area, click the arrow next to a category in the expandable tree.
3. To filter the list of data items in the **Item** area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
4. In the **Item** area, click a data item.
5. To set the parameters for the data item in the **Parameters** tab of the panel on the right, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
6. To view detailed information about the data item, use the Information Viewer (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
7. Click **Add**.
8. Make additional data item selections, delete a data item by highlighting it and clicking **Delete**, or click **Close** to return to the Report Builder.

**Ownership Reports (Report Builder)**

The ownership data in Thomson Reuters Spreadsheet Link allows you to view shareholders of a given security for the purpose of creating tear sheets, pitch book pages, and creating various shareholder summaries.

Below are some examples of how you can use this data:

- Produce a holders (firm, funds, strategic holders, etc.) report of a single security, with holders’ holding position, total assets, changes, investment style and other information.
- Produce a holders momentum report with historical data.
- Create a holders report for top \( n \) holders in a particular security.

**Create an Ownership Report (Report Builder)**

**To create an ownership report**

1. On the **Thomson Reuters** menu, point to **Build** and click **Build a Report**.
2. From the Entity Type drop-down, select **Company**.
3. Specify the identifiers for your report (see "Look Up Identifiers" on page 122).
4. In the **Ownership** tab, select a view from the **Owner Type** (see "Owner Types (Report Builder)" on page 125) drop-down.
5. To select a period in addition to the most recent period, select an available period to highlight it, and click **Add**. To select a period other than the most recent period, select **Most Recent** to highlight it, click **Remove**, select at least one available period, and click **Add**.
6. To view all ownership of the selected owner type from the selected period, click **All**.
   - To view top holders, click **Top**, type a number up to 8,000, and select to search by **value**, **value change**, **position (pos)**, or **position change (pos chg)**.
7. Add data items by clicking the **Add** icon. For more information on making data item selections, see Make Data Item Selections for an Ownership Report (see "Make Data Item Selections for an Ownership Report (Report Builder)" on page 124).
8. Select a format, grouping the data by items or period. To add more formatting, click **Options**. For more information on formatting, see Use Format Options (see "Adjust and Apply Formats (Report Builder)" on page 132).
9. To export a data table to a spreadsheet, click **Export**. To customize your export options, see **Customize Your Export (Report Builder)** on page 132.

Specify Identifiers (Report Builder - Ownership)

To include a known identifier
- In the **Identifier** box, type an identifier.

To search for an identifier for your report
- Click **🔍** and then **Select an Identifier** (see "Look Up Identifiers" on page 122).

To reference a cell for your report
- Click **🔗** and click **Reference a Cell** (see "Reference a Cell (Report Builder)" on page 121).

Make Data Item Selections for an Ownership Report (Report Builder)

To make data item selections in the Ownership tab of Report Builder
1. In the data items area, select or clear the checkboxes next to the ownership data items you would like to include in your report.
2. To add data items, in the **Data Items** area, click the **Add** button.
   a. From the **Data Item Categories** list, select data items from the various categories. To search for a category, click the **🔍** icon, type a keyword and select search criteria. Click **Search**.
   b. To filter data items, type a data item or the beginning of a data item in the Filter box.
   c. Select data item(s) and parameters.
   d. Click **Add**.
3. Make additional data item selections, delete a data item by highlighting it and clicking **Delete**, or click **Close** to return to the Report Builder.
## Owner Types (Report Builder)

<table>
<thead>
<tr>
<th>Owner Type</th>
<th>Default Data Items</th>
<th>Definition of Data Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Shareholders</td>
<td>• TF.OP.InvestorName</td>
<td>Name of owner</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.PctOwnership</td>
<td>The percent of total shares outstanding that an investor holds of a company. It is calculated by dividing the investor share position in a company by the adjusted shares outstanding of the company as of the latest filing date.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.Position</td>
<td>Number of shares held by investor</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.PositionChg</td>
<td>Change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.PctPosChg</td>
<td>Percentage change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.PositionDate</td>
<td>Date of shares reported.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.FilingType</td>
<td>Description of filing sources for shares reported.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.OwnerEquityAssets</td>
<td>Total value of the holdings of an investor (as of the filing dates of the holdings in each stock).</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.OwnerInvestmentStyle</td>
<td>Investment style for investor/owner, such as Aggressive Growth. This is derived from the style of the constituent stocks, which is in turn derived from the earnings of the companies.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.OwnerTurnover2</td>
<td>Turnover is a measure of the churn in an owner's portfolio—the buying and selling that take place over a period of time. Thomson Reuters calculates investor % turnover after analyzing its previous 12 quarters (36 months) of portfolio holdings.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.OwnerInvestorSubType</td>
<td>More-detailed breakdown of Investor Type, such as Pension Fund or Holding Company.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.InvestorCity</td>
<td>City in which investor is located</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.InvestorCountry</td>
<td>Country in which investor is located</td>
</tr>
<tr>
<td>Owner Type</td>
<td>Default Data Items</td>
<td>Definition of Data Item</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td><strong>Firms</strong></td>
<td>TF.OP.InvestorName</td>
<td>Name of owner</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PctOwnership</td>
<td>The percent of total shares outstanding that an investor holds of a company. It is calculated by dividing the investor share position in a company by the adjusted shares outstanding of the company as of the latest filing date.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.Position</td>
<td>Number of shares held by investor.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PositionChg</td>
<td>Change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PctPosChg</td>
<td>Percentage change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PositionDate</td>
<td>Date of shares reported.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.FilingType</td>
<td>Description of filing sources for shares reported.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerEquityAssets</td>
<td>Total value of the holdings of an investor (as of the filing dates of the holdings in each stock).</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerInvestmentStyle</td>
<td>Investment style for investor/owner, such as Aggressive Growth. This is derived from the style of the constituent stocks, which is in turn derived from the earnings of the companies.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerTurnover2</td>
<td>Turnover is a measure of the churn in an owner's portfolio--the buying and selling that take place over a period of time. Thomson Reuters calculates investor % turnover after analyzing its previous 12 quarters (36 months) of portfolio holdings.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerInvestorSubType</td>
<td>More-detailed breakdown of Investor Type, such as Pension Fund or Holding Company.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InvestorCity</td>
<td>City in which investor is located.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InvestorCountry</td>
<td>Country in which investor is located</td>
</tr>
<tr>
<td><strong>Funds</strong></td>
<td>TF.OP.InvestorName</td>
<td>Name of owner</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InvestorParent</td>
<td>Name of parent owner/institution of investor.</td>
</tr>
<tr>
<td>Owner Type</td>
<td>Default Data Items</td>
<td>Definition of Data Item</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PctOwnership</td>
<td>The percent of total shares outstanding that an investor holds of a company. It is calculated by dividing the investor share position in a company by the adjusted shares outstanding of the company as of the latest filing date.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.SharesHeld</td>
<td>Number of shares held by investor.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.SharesHeldChg</td>
<td>Change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerPctPosChg</td>
<td>Percentage change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.HoldingsDate</td>
<td>Date of shares reported.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.FilingType</td>
<td>Description of filing sources for shares reported.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InvestorTotalEquityAssets</td>
<td>Total value of the holdings of an investor (as of the filing dates of the holdings in each stock).</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerInvestmentStyle</td>
<td>Investment style for investor/owner, such as Aggressive Growth. This is derived from the style of the constituent stocks, which is in turn derived from the earnings of the companies.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnershipTurnover</td>
<td>Turnover is a measure of the churn in an owner's portfolio—the buying and selling that take place over a period of time. Thomson Reuters calculates investor % turnover after analyzing its previous 12 quarters (36 months) of portfolio holdings.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InvestorSubType</td>
<td>More-detailed breakdown of Investor Type, such as Pension Fund or Holding Company.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InvestorCity</td>
<td>City in which investor is located.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InvestorCountry</td>
<td>Country in which investor is located</td>
</tr>
<tr>
<td>Firm &amp; Funds</td>
<td>TF.OP.InvestorName</td>
<td>Name of owner</td>
</tr>
<tr>
<td>(each firm that owns the selected identifier and each fund associated with that firm)</td>
<td>TF.OP.PctOwnership</td>
<td>The percent of total shares outstanding that an investor holds of a company. It is calculated by dividing the investor share position in a company by the adjusted shares outstanding of the company as of the latest filing date.</td>
</tr>
<tr>
<td>Owner Type</td>
<td>Default Data Items</td>
<td>Definition of Data Item</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>TF.OP.Position</td>
<td>Number of shares held by investor.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PositionChg</td>
<td>Change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PctPosChg</td>
<td>Percentage change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PositionDate</td>
<td>Date of shares reported.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.FilingType</td>
<td>Description of filing sources for shares reported.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerEquityAssets</td>
<td>Total value of the holdings of an investor (as of the filing dates of the holdings in each stock).</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerInvestmentStyle</td>
<td>Investment style for investor/owner, such as Aggressive Growth. This is derived from the style of the constituent stocks, which is in turn derived from the earnings of the companies.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerTurnover2</td>
<td>Turnover is a measure of the churn in an owner's portfolio--the buying and selling that take place over a period of time. Thomson Reuters calculates investor % turnover after analyzing its previous 12 quarters (36 months) of portfolio holdings.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.OwnerInvestorSubType</td>
<td>More-detailed breakdown of Investor Type, such as Pension Fund or Holding Company.</td>
</tr>
<tr>
<td>Strategic Holders</td>
<td>TF.OP.InvestorName</td>
<td>Name of owner</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PctOwnership</td>
<td>The percent of total shares outstanding that an investor holds of a company. It is calculated by dividing the investor share position in a company by the adjusted shares outstanding of the company as of the latest filing date.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.Position</td>
<td>Number of shares held by investor.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.PositionChg</td>
<td>Change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td>Owner Type</td>
<td>Default Data Items</td>
<td>Definition of Data Item</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.OwnerPctPosChg</td>
<td>Percentage change in the number of shares held by an investor between two selected filing dates.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.PositionDate</td>
<td>Date of shares reported.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.FilingType</td>
<td>Description of filing sources for shares reported.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.OwnerEquityAssets</td>
<td>Total value of the holdings of an investor (as of the filing dates of the holdings in each stock).</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.OwnerInvestmentStyle</td>
<td>Investment style for investor/owner, such as Aggressive Growth. This is derived from the style of the constituent stocks, which is in turn derived from the earnings of the companies.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.OwnerTurnover2</td>
<td>Turnover is a measure of the churn in an owner's portfolio---the buying and selling that take place over a period of time. Thomson Reuters calculates investor % turnover after analyzing its previous 12 quarters (36 months) of portfolio holdings.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.OwnerInvestorSubType</td>
<td>More-detailed breakdown of Investor Type, such as Pension Fund or Holding Company.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.InvestorCity</td>
<td>City in which investor is located.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.InvestorCountry</td>
<td>Country in which investor is located.</td>
</tr>
<tr>
<td>Insider Holders</td>
<td>• TF.OP.OwnerInsiderName</td>
<td>Name of insider</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.InsiderRelationship</td>
<td>Relationship of insider to issuer, such as CEO or director.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.InsiderDirectHoldings</td>
<td>Shares that are held in the name of the insider.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.InsiderIndirectHoldings</td>
<td>Shares that are controlled by the insider, yet are held by another entity such as a family member, a trust, a company plan, or even a corporation to which the insider is affiliated. In many cases, the same block of indirect stock may be claimed by several insiders, such as a group of trustees over the same trust, or several partners in the same partnership.</td>
</tr>
<tr>
<td></td>
<td>• TF.OP.InvestorTransactionInsiderDate</td>
<td>Date of transaction.</td>
</tr>
<tr>
<td>Owner Type</td>
<td>Default Data Items</td>
<td>Definition of Data Item</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------</td>
<td>--------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderSource</td>
<td>Reporting source of transaction.</td>
</tr>
<tr>
<td>Insider Transactions</td>
<td>TF.OP.OwnerInsiderName</td>
<td>Name of insider</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderRelationship</td>
<td>Relationship of insider to issuer, such as CEO or director.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderIndirectIndicator</td>
<td>I for Indirect (D for Direct)</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderNumShares</td>
<td>Number of shares in this transaction. May be a negative number in case of disposition. May also be null in the case of an opening balance.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderTransactionType</td>
<td>Type of transaction the insider performed.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderPrice</td>
<td>Exercise or transaction price</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderMarketVal</td>
<td>Calculation of Price times the number of shares to give the value of the transaction.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderSource</td>
<td>Reporting source of transaction.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderDirectHoldings</td>
<td>Shares that are held in the name of the insider.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderIndirectHoldings</td>
<td>Shares that are controlled by the insider, yet are held by another entity such as a family member, a trust, a company plan, or even a corporation to which the insider is affiliated. In many cases, the same block of indirect stock may be claimed by several insiders, such as a group of trustees over the same trust, or several partners in the same partnership.</td>
</tr>
<tr>
<td></td>
<td>TF.OP.InsiderHoldingsTotal</td>
<td>Sum of the Direct and Indirect shares.</td>
</tr>
</tbody>
</table>

**Reuters As Reported Fundamental Data Reports (Report Builder)**

Thomson Reuters Spreadsheet Link Report Builder lets you create custom reports based on Reuters As Reported fundamental data. This is your one-stop platform for collecting company-specific financials from individual reports so that you can conduct bottom-up analysis and make auditing easier.
You can create these reports using income statements, balance sheets, cash flow statements, or a single Reuters As Reported fundamental data item and then apply a time frame and format to the report.

Build a Report with Financial Statements

You can create reports using one of three kinds of financial statements: income statements, balance sheets, or cash flow statements.

To build a report with a financial statement
1. On the Thomson Reuters menu, point to Build and click Build a Report.
2. Select an Entity Type.
3. Specify an identifier (on page 121).
4. In the As Reported tab in the Data Items area, select Financial Statements.
5. From the Statement drop-down, select Income Statement, Balance Sheet, or Cash Flow Statement.
6. Select a Reporting State (see "Reporting State (Parameter)" on page 23), or reference a cell.
7. Select whether to Include Nulls, or reference a cell.
8. Select a currency or reference a cell.
9. Select a scale (see "Scale (Parameter)" on page 23), or reference a cell.
10. Select a time frame (see "Select a Time Frame for your Report (Report Builder)" on page 132).
11. Under Formats, click Layout #1 or Layout #2.
12. To export a data table to a spreadsheet, click Export. To customize your export options, see Customize Your Export (see "Customize Your Export (Report Builder)" on page 132).

Build a Report with a Single Data Item

You can create reports using a Reuters As Reported financial data item.

To build a report with a single Reuters financial data item
1. On the Thomson Reuters menu, point to Build and click Build a Report.
2. Select an **Entity Type**.
3. Specify your identifier(s) (on page 121).
4. In the As Reported tab in the Data Items area, select **Data Item**.
5. To search for a data item, click the down arrow next to the magnifying glass, click Lookup Data Item, and select a data item (on page 142).
6. Select a time frame (see "Select a Time Frame for your Report (Report Builder)" on page 132).
7. Under Formats, click Layout #1 or Layout #2.
8. To export a data table to a spreadsheet, click **Export**. To customize your export options, see Customize Your Export (see "Customize Your Export (Report Builder)" on page 132).

**Select a Time Frame for your Report (Report Builder)**

You can select a single period or time series time frame for your Reuters As Reported fundamental data item report.

**To select a time series for your report**

1. In the **As Reported** tab of **Report Builder** under **Time Frame**, select **Time Series**.
2. From the **Reporting Basis** drop-down, select Fiscal Year, Fiscal Semi-Annual, Fiscal Quarter, or Fiscal Interim.
3. From the **Date Relationship** drop-down, select **Absolute**, **Relative** or **Last**.
   a. To select an absolute time series, select Absolute from the Date Relationship drop-down, and then make selections in the **From** and **To** drop-downs.
   b. To select relative periods, select **Relative** from the **Date Relationship** drop-down, and select the **Offset** with the up and down arrows. Offsets allow you to select historical parameters, where the current date is zero. For example, a fiscal year with a -2 offset is two fiscal years ago.
   c. To select the last *n* of the Reporting Basis you selected, select a number with the up and down arrows in the **Last** box.

**To select a single period for your report**

1. In the **As Reported** tab of **Report Builder** under **Time Frame**, select **Single Period**.
2. In the **Period** box, click the down arrow, and select a period. If the period you want does not appear, click more (see "Date and Period Builder" on page 212), and click **OK**.

**Adjust and Apply Formats (Report Builder)**

From the Format section, you can choose various layouts. After selecting a layout, you can also apply additional formatting options to your report.

**To format reports**

1. In the **Format** area, click **Options**.
2. To include a title in the report, click the check box, and type a name in the **Title** box.
3. When available, click the check boxes to show or hide dates and border.
4. Select a title and heading font style (bold, italic, underline and/or font color).
5. To insert blank rows and/or columns (equity report only), select criteria from the appropriate drop-downs and click **Add**.
6. Click **OK**.

**Customize Your Export (Report Builder)**

You can customize your export and set your defaults for future exports to Excel. Export options differ by component.
To customize your export
1. Click the Export drop-down, and choose Export As.
2. Select Function Calls or Static Values from the Calculation Type drop-down.
3. Select a clean-up option.
4. Select whether you would like to keep these settings as defaults when exporting data.
5. To view the options every time you export, select Always show these settings when exporting data.
6. Click OK to export the table to Excel.
Chapter 12 Screen Builder

Thomson Reuters Spreadsheet Link Screen Builder helps you identify investment opportunities by finding entities that meet your specified criteria. You can screen against data items and formulas, save your screen, and export your resulting identifier set as criteria or resulting values to Excel.

Build a Screen (Screen Builder)

You can build a screen to filter the information you want, save your screen, and reuse it.

A screen can help you identify target companies by filtering the criteria you choose against your chosen universe. Thomson Reuters Spreadsheet Link filters for companies in steps, finding the companies that meet each criterion in order.

When you build your screen, you can include or exclude any of the items from the Quick List, whether descriptive elements or key statistical values, and/or you can build a screen using custom criteria. You can add screening criteria in any order. Additionally, you can manually add any descriptive element, key statistical value, or other data item or value by clicking and can bypass using Quick List.

After you add all your criteria to the screen, you can run the screen in the order you added the criteria, reorder them, or edit them.

To build a screen
1. On the Thomson Reuters menu, point to Build and click Build a Screen.
2. Select a universe.
   a. To select private or public companies, select Active Companies (Primary Only) or Active Companies, and then select Public, Private, or Public and Private.
b. To select a list of equities, select Index, Portfolio, or Watchlist, and type the name (for example, MyWatchlist5_06302010), or click 📣 to search.

3. Select a currency.

4. Add commonly used screening criteria in the Quick List, or manually add filters with custom criteria (see "Add Custom Criteria to a Screen (Screen Builder)" on page 138).

Commonly used screening criteria in the Quick List include exchange, geography, sector, industry (see "Add Exchange, Geography, Sector, or Industry through the Quick List to Screening Criteria (Screen Builder)" on page 137), private equity backing of private companies (see "Add Whether a Private Company is Private Equity Backed to Screening Criteria (Screen Builder)" on page 137), or key statistics (see "Add Key Statistics through the Quick List to Screening Criteria (Screen Builder)" on page 138).

5. Reorder (see "Reorder Screen Criteria (Screen Builder)" on page 143), edit (see "Edit Screen Criteria (Screen Builder)" on page 143), or delete (see "Delete Screen Criteria (Screen Builder)" on page 144) criteria.

6. Click Show Results.

The system returns at most 8000 entities, sorted alphabetically by entity name.

7. Adjust the view of or export the results (see "Work with Results (Screen Builder)" on page 145).
8. To export your screen, click Export. To customize the export, see Customize your Export (see "Customize Your Export (Screen Builder)" on page 146).
Add Commonly Used Items to Screening Criteria

When you build your screen, you can add commonly used descriptive elements or key statistical values, all available in the Quick List.

You can also add these items one by one by clicking , but the Quick List allows you to view and add these commonly used items all at once, rather than searching for and selecting them individually.

Add Exchange, Geography, Sector, or Industry through the Quick List to Screening Criteria (Screen Builder)

To add exchange, geography, sector, or industry through the Quick List to screening criteria

1. Click Quick List.
2. Click  in a field in the left column.
   To select multiple items from the left box, hold the control key while selecting multiple items.
3. Select an item in the left box, click  and click OK.
   To select multiple items from the left box, hold the control key while selecting multiple items.
4. Click Add to Criteria.

Add Whether a Private Company is Private Equity Backed to Screening Criteria (Screen Builder)

In order to add the criterion of having a private company backed by private equity or not, you must first select a universe of Active Companies (Primary Only), Active Companies, or Watchlist, and you must select Private in the adjacent drop-down.
To add whether a private company is private equity backed to screening criteria

1. Click Quick List.
2. Click \(\text{next to PE Backed}\) in the left column.
3. Click Yes or No.
4. Click OK.
5. Click Add to Criteria.

Add Key Statistics through the Quick List to Screening Criteria (Screen Builder)

To add key statistics through the Quick List to screening criteria

1. Click Quick List.
2. To use a ticker as a reference point for choosing base values against which you can screen, type a ticker in the Comparison Identifier box, and press ENTER. To look up a ticker (see "Identifier Lookup" on page 29), click \(\text{}

   The values for the reference ticker appear to on right side of the Quick List.
3. In the right column, next to a commonly used data item, use the drop-down to select a condition (for example, greater than or equal).
4. Type a value.
5. To change the period of a data item, click the down arrow next to the time period in parentheses, and click a different period.
   Not all data items have a period, and not all data items with a period have multiple choices.
6. To add more data items, repeat steps 3-4.
7. Click Add to Criteria.

Add Custom Criteria to a Screen (Screen Builder)

You can add custom criteria to your screen, including saved custom expressions or screens, many data items, and all the commonly used criteria in the Quick List (see "Add Commonly Used Items to Screening Criteria" on page 137).

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of instrument</td>
<td>For example common stock, currency rate, futures, etc.</td>
</tr>
</tbody>
</table>
| Industry          | • Industry Classification Benchmark (ICB) industry, sector, super- or sub-sector  
<pre><code>              | • Global Industry Classification Standard (GICS) Sector, Industry, Industry Groups, Subindustry |
</code></pre>
<p>| Geographical region |       |
| Country of exchange |     |
| Exchange | |</p>
<table>
<thead>
<tr>
<th>Criterion</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saved screen</td>
<td>You can open a saved screen, modify it, and screen on the newly chosen criteria.</td>
</tr>
<tr>
<td>Data item</td>
<td>You can screen on any data item available to you in Thomson Reuters Spreadsheet Link</td>
</tr>
<tr>
<td>Custom expression</td>
<td>You can use a custom formula that you have saved.</td>
</tr>
</tbody>
</table>

**Add Industry or Sector to a Screen (Screen Builder)**

While you are adding other custom criteria to a screen, you add the Industry Classification Benchmark (ICB) industry, sector, super- or sub-sector. You can also filter by Global Industry Classification Standard (GICS) Sector, Industry, Industry Groups, or Subindustry.

**To add an ICB or GICS industry or sector to a screen**

1. In Screen Builder, click ![Add...](image)
2. Click ![Add...](image)
3. Point to **Add Basic Descriptive Items**, then point to **Industries**, and click a category of ICB or GICS industry or sector.
4. From the left box, select an industry or sector that you would like to include or exclude in your screen. To select multiple industries or sectors, hold the CTRL key while clicking the industries or sectors.
5. Click ![Add...](image)
6. To exclude the your selections, select **Exclude these ICB/GICS Sector/Industry**.
7. Click ![Add...](image)
8. To add another custom criterion to your screen, click the arrow next to OK, and click **And**, **Or**, or **Xor** (exclusive or), and select custom criterion.
9. Click ![Add...](image).

**Add an Exchange to a Screen (Screen Builder)**

While you are adding other custom criteria to a screen, you can filter by an exchange on which the trading instrument is listed.

**To add an exchange to a screen**

1. In Screen Builder, click ![Add...](image)
2. Click ![Add...](image)
3. Point to **Add Basic Descriptive Items**, and click **Exchanges**.
4. From the left box, select an exchange you would like to include or exclude in your screen. To select multiple primary exchanges, hold the CTRL key while clicking exchanges.
5. Click ![Add...](image)
6. To exclude the your selections, select **Exclude these Exchanges**.
7. Click OK.
8. To add another custom criterion to your screen, click the arrow next to OK, and click And, Or, or Xor (exclusive or), and select custom criterion.
9. Click OK.

Add an Instrument Type to a Screen (Screen Builder)

While you are adding other custom criteria to a screen, you can include an instrument type.

To add an instrument type to a screen
1. In Screen Builder, click Add...
2. Click
3. Point to Add Basic Descriptive Items, and click Instrument Type.
4. From the left box, select an instrument type. To select multiple instrument types, hold the CTRL key while clicking instrument types.
5. Click
6. Click OK.
7. To add another custom criterion to your screen, click the arrow next to OK, and click And, Or, or Xor (exclusive or), and select custom criterion.
8. Click OK.

Add the Country of Exchange to a Screen (Screen Builder)

While you are adding other custom criteria to a screen, you can add the country with the exchange in which the instrument on which you are screening is traded.

To add the country of exchange to a screen
1. In Screen Builder, click Add...
2. Click
3. Point to Add Basic Descriptive Items, and click Country (of Exchange).
4. From the left box, select a country you would like to include or exclude in your screen. To select multiple countries, hold the CTRL key while clicking countries.
5. Click
6. To exclude your selections, select Exclude these Country (of Exchange).
7. Click OK.
8. To add another custom criterion to your screen, click the arrow next to OK, and click And, Or, or Xor (exclusive or), and select custom criterion.
9. Click OK.

Add Geographical Region to a Screen (Screen Builder)

While you are adding other custom criteria to a screen, you can include a geographical region.

To add geographical region to a screen
1. In Screen Builder, click Add...
2. Click
3. Point to **Add Basic Descriptive Items**, and click **Region**.
4. From the left box, select a region you would like to include or exclude in your screen. To select multiple regions, hold the CTRL key while clicking regions.

5. Click ▶▶
6. To exclude the your selections, select **Exclude these Region**.
7. Click **OK**.
8. To add another custom criterion to your screen, click the arrow next to **OK**, and click **And**, **Or**, or **Xor** (exclusive or), and select custom criterion.
9. Click **OK**.

**Add Key Statistics to a Screen (Screen Builder)**

While you are adding other custom criteria to a screen, you can add key statistics. These are also available through the Quick List (see “Add Commonly Used Items to Screening Criteria” on page 137).

**To add key statistics to a screen**

1. In Screen Builder, click ▶ Add...

2. Click
3. Point to **Add Basic Key Statistics**, and click a key statistic, or point to a key statistic category and click a period.
4. To add a different key statistic or data item, click **More** (on page 142).
5. Click the arrow next to the greater than (>) sign, and click a condition (for example, greater than or equal to).
6. In the field on the right, type a value, or click the arrow of the blank drop-down on the right, or click **Select a Data Item** (see “Filter by Data Item (Screen Builder)” on page 142), **Create an Expression** (see “Filter by Custom Expression (Screen Builder)” on page 142), or **Reference a Cell** (see “Reference a Cell (Report Builder)” on page 121).
7. To add another custom criterion to your screen, click the arrow next to **OK**, and click **And**, **Or**, or **Xor** (exclusive or), and select custom criterion.
8. Click **OK**.

**Filter by Saved Screen (Screen Builder)**

You can use a screen that you, a colleague, or Thomson Reuters previously created and saved (see “Save a Screen (Screen Builder)” on page 144) and use it as is, or use it with modifications.

**To filter by saved screen**

1. In Screen Builder, click ▶ Add...

2. Click
3. Click **Insert Saved Screen**.
4. In the **Open Screens** dialog, type part or all of the name or type of screen.
5. Select a screen in the middle panel.
6. Click **OK**.
7. To add another custom criterion to your screen, click the arrow next to **OK**, and click **And**, **Or**, or **Xor** (exclusive or), and select custom criterion.
8. Click **OK**.

**Filter by Data Item (Screen Builder)**

You can filter by many of the data items for which you have entitlements.

**To add a data item to a screen**

1. In **Screen Builder**, click ![Add...](image)

2. Click ![Select a Data Item](image)

3. Click **(Select a Data Item)**.
4. In the Data Item Lookup dialog, select a data item (on page 142), and click **OK**.
5. To add a condition (for example, greater than or equal to), click the arrow next to the greater than (>) sign, and click a condition.
6. In the field on the right, type a value, or click the arrow of the blank drop-down on the right, and click **Select a Data Item** (on page 142), Create an Expression (see "Filter by Custom Expression (Screen Builder)" on page 142), or Reference a Cell.
7. To add another custom criterion to your screen, click the arrow next to **OK**, and click **And**, **Or**, or **Xor** (exclusive or), and select custom criterion.
8. Click **OK**.

**To browse for a data item by category**

1. From the **Category** area, click ![next to a category in the expandable tree](image)
2. To filter the list of data items in the **Item** area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
3. In the **Item** area, click a data item.
4. To set the parameters for the data item in the **Parameters** tab of the panel on the right, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
5. To view detailed information about the data item, use the Information Viewer (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
6. Click **OK**.

**Filter by Custom Expression (Screen Builder)**

You can build a custom formula, or expression, to use in your screen.

**To filter by custom expression**

1. In **Screen Builder**, click ![Add...](image)

2. Click ![Create Expression](image)

3. Click **(Create Expression)**.
4. In the Expression Builder dialog, create an expression (on page 143), and click **OK**.
5. To add a condition (for example, greater than or equal to), click the arrow next to the greater than (>) sign, and click a condition.
6. In the field on the right, type a *value*, or click the arrow of the blank drop-down on the right, and click *Select a Data Item* (on page 142), *Create an Expression* (see "Filter by Custom Expression (Screen Builder)" on page 142), or *Reference a Cell*.

7. To add another custom criterion to your screen, click the arrow next to OK, and click *And*, *Or*, or *Xor* (exclusive or), and select custom criterion.

8. Click OK.

**To create a custom expression**

1. Click the *Data Items* tab.
2. Locate a data item by name or category.
3. To set a parameter for the data item, see *Set Parameters for Data Items*.
4. To add a data item to the end of an expression,
   a. Choose the data item you want to add to the expression.
   b. In the *Add to Expression* drop-down, click *Add to Expression (End of Expression)*.
5. To add a data item at the location of the cursor in the *Expression* box,
   a. Choose the data item you want to add to the expression.
   b. Place your cursor in the location within the *Expression* box that you want the data item to appear.
   c. Click the *Add to Expression* drop-down, and then click *Add at cursor*.
6. Add an operator (see "Mathematical Operators" on page 112) to the expression.
7. To add additional data items to the expression, repeat steps 3 through 5.
8. To apply a function to the data item, locate the function by category or keyword.
9. Add the function to the expression at the location of the cursor (see "Add a Function at the Cursor (Expression Builder)" on page 55), at the end of an expression, around an entire expression, or around a selected part of an expression.
10. To check the expression syntax, see *Expression Area*.
11. To evaluate the expression, see *Expression Area*.
12. Click OK.

**Reorder Screen Criteria (Screen Builder)**

After you add descriptive, key statistic, or custom criteria to your screen, you can reorder them. Screen Builder screens in the order that you choose, finding all the entities from your universe that fit the first criterion in the list, then the second criterion, etc.

**To reorder your screen criteria**

1. Build a screen (see "Build a Screen (Screen Builder)" on page 134).
2. In the top half of the display, highlight a criterion, and click *Move Up* or *Move Down* to reorder.

**Edit Screen Criteria (Screen Builder)**

After you add descriptive, key statistic, or custom criteria to your screen, you can edit the criteria before or after you run the screen. Alternatively, you can open a saved screen, edit it, and run it.

**To edit screen criteria**

1. Build (see "Build a Screen (Screen Builder)" on page 134), run (see "Run a Screen (Screen Builder)" on page 144), or open (see "Open a Screen (Screen Builder)" on page 144) a screen.
2. In top half of the display, highlight a criterion, and click *Edit*.
3. In the custom criteria area that appears, make edits (see "Add Custom Criteria to a Screen (Screen Builder)" on page 138).
4. Click OK.
Delete Screen Criteria (Screen Builder)

You must build (see "Build a Screen (Screen Builder)" on page 134), run (see "Run a Screen (Screen Builder)" on page 144), or open (see "Open a Screen (Screen Builder)" on page 144) a screen before you can delete criteria.

To delete a criterion
1. In the top half of the display, highlight a criterion.
2. Click Delete.

To delete all the criteria
1. In the top half of the display, click the drop-down arrow next to delete.
2. Click Delete All.

Save a Screen (Screen Builder)

You can use a saved screen as a criterion for another, but any screen used as a criterion cannot have any criterion that is a screen. For example, you can create Screen A, using Screen B as a criterion. You cannot then use Screen A as a criterion for Screen C because Screen A has a screen, B, as one of its criterion.

To save a screen
1. After you build a screen (see "Build a Screen (Screen Builder)" on page 134), click Save.
2. In the Name box, type a name for your screen.
3. To include a description for your screen, type it in the Description box.
4. To select a security setting click Security Level drop-down.
5. Select a location for your screen, or click New Folder, type a new folder name, select a folder location, and click OK.
6. Click OK.

Open a Screen (Screen Builder)

You can open a screen that you, a colleague, or Thomson Reuters has previously created and saved.

To open a screen
1. In the Criteria area, click Open.
2. Click in the Search box, and type all or part of a screen name.
3. In Name column, click a screen to view its information in the right panel.
4. Click OK.
5. Edit the criteria (see "Edit Screen Criteria (Screen Builder)" on page 143), or click Show Results.

Run a Screen (Screen Builder)

To run a screen
1. Build (see "Build a Screen (Screen Builder)" on page 134) or open (see "Open a Screen (Screen Builder)" on page 144) a screen.
2. Click Show Results. The system returns at most 8000 entities, sorted alphabetically by entity name.
3. To display the results differently or export them, see Work with Results (see "Work with Results (Screen Builder)" on page 145).
4. To export your screen to a spreadsheet, click Export. To customize your export, see Customize Your Export (see "Customize Your Export (Screen Builder)" on page 146).
5. To reset all options, click New.
Delete a Screen (Screen Builder)

You can delete a screen that you have saved. You cannot delete a shared screen or a Thomson Reuters screen.

To overwrite a screen that you have run but not saved, click New in the Criteria area to build another screen.

To delete a screen
1. In the Criteria area, click Open.
2. In the Open Screens dialog, click in the Search box, and type all or part of a screen name.
3. In Name column, click a screen to view its information in the left panel.
4. Click Delete.
5. Click OK.

Work with Results (Screen Builder)

After you run a screen, you can change the view of the results or export them build a report, create a watch list, or populate a spreadsheet.

Save Results as a Watch List (Screen Builder)

To save results as a watch list
1. Run a screen (see "Run a Screen (Screen Builder)" on page 144).
2. Click Save to List...
3. If you are prompted, click Yes to save the edits to the screen.
4. In the Name box, type a name (50 characters maximum, alphanumeric characters or underscores only, no spaces) for your watch list.
5. To include a description for your watch list, type it in the Description box.
6. To select a security setting click Security Level drop-down.
7. Select a location for your screen, or click New Folder, type a new folder name, select a folder location, and click OK.
8. Click Close.

Build a Report from Results (Screen Builder)

You can use the results of a screen to build a more complex report.

To build a report from screen results
1. Run a screen (see "Run a Screen (Screen Builder)" on page 144).
2. In the Results area, click Build a Report.
3. Select Dynamic or Static.
4. Click OK.
5. Continue to build a report (see "Report Builder" on page 120).

Change Criteria after Running a Screen (Screen Builder)

The Results area clears the results while you make edits.

To change criteria after you have run a screen
1. Run a screen (see "Run a Screen (Screen Builder)" on page 144).
2. Edit the criteria (see "Edit Screen Criteria (Screen Builder)" on page 143).
3. Click Show Results.
Change Currency of Values after Running a Screen (Screen Builder)

Clicking does not affect the currency you have set for an individual data item.

To switch between viewing values in the your default currency and Screen Builder Currency
1. Run a screen (see "Run a Screen (Screen Builder)" on page 144).
2. To view values in the currency set in the Options (see "Change Currency Settings (Options)" on page 192) dialog, click. Click again to return to values in the currency set in the Currency drop-down of Screen Builder.

Change Results Display (Screen Builder)

To change the results display
1. Run a screen (see "Run a Screen (Screen Builder)" on page 144).
2. From the View drop-down in the Results area, select Companies, All Identifiers, or Screen Criteria.
3. To add data (see "Make Data Item Selections for a Custom Report (Report Builder)" on page 123) item columns to your results, click.

Customize Your Export (Screen Builder)

You can customize your export and defaults for future exports to Excel.

To customize export settings
1. After building (see "Build a Screen (Screen Builder)" on page 134) and running (see "Run a Screen (Screen Builder)" on page 144) a screen, click on the Excel spreadsheet where you would like to export your data.
2. Click the Export drop-down arrow, and choose Export As.
3. Select to export either your Results or your selected Criteria.
4. If exporting as criteria, select Output and, if you select Text Across Multiple Lines, Layout.
5. If exporting as results, select Calculation Type, Output, Layout, Data Items, Identifiers, Headers, and Clean-Up criteria from the appropriate drop-downs. Not all selections are available for all screens.
6. Select if you would like to keep these settings as defaults when exporting data.
7. To view the options every time you export, select Always show these settings when exporting data.
8. Click OK to export to Excel.
Chapter 13 Multi-Factor Ranking

Multi-Factor Ranking is a key step in the stock selection process. You can rank based on your criteria and generate a report from the results. These reports can be the basis for your investment choices.

You can select a universe to rank, which can be a saved watchlist or portfolio, an index, a single symbol or symbol list, or dynamic screen results.

You can rank the universe against itself or against a saved watchlist or portfolio, an index, a single symbol or symbol list, or dynamic screen results. If you rank a universe against itself, you can rank from 1 to n, where “n” is the number of securities in the universe.

You can then rank by up to 20 criteria. Criteria are data items and expressions. You can make three adjustments for the criteria:

• **Sort the values to be ranked in ascending or descending order.** This means that the system sorts the values of the criteria in either ascending or descending order prior to ranking those values.

• **Select a weight for each criterion.** A weight is a multiplier of weighting value on the rank. Thomson Reuters Spreadsheet Link multiplies each rank by the weighting in order to give certain criteria more influence in the final ranking. For example, if you want a certain data item to have more weight in the ranking, you might give it a weight of three so that it is three times as important as the other data items.

• **Decide how to rank a criterion that comes back as null.** This parameter allows you to select how Thomson Reuters Spreadsheet Link handles nulls. Several options either give that company a predetermined value or exclude the company. It can affect the overall ranking because of the way you choose for Multi-Factor Ranking to treat companies with data items that have a null value. For example, if you select Exclude the Entity for a null response, the final rank for an item with a null response displays the text that you set for null values in Options (see "Change Error Message Display Settings (Options)" on page 194).

You can select a currency for the entire ranking results and also rank the set of results by centile, decile, quintile, or quartile quantiles.

After you get the results of the ranking, you can save the ranking, save the symbol list that you created for the ranking, and export the ranking into your spreadsheet as a report.

Build a Multi-Factor Ranking

You can rank a universe against itself or against an identifier, a new or saved list (see "Watchlist Builder" on page 118) of identifiers, a portfolio (see "Funded Portfolio Builder" on page 115), an index, or a dynamic screen (see "Screen Builder" on page 134). You can have up to 20 lines of criteria in your ranking.

To build a multi-factor ranking
1. From the drop-down, select an **Entity Type**.

2. In the **Identifier(s)** box, type an identifier, or click 📋🔍 to look up an identifier (see "Look Up Identifiers" on page 122), import a list (on page 122), import a screen (see "Import a Saved Screen" on page 122), or build a list (see "Build a Watchlist" on page 149).

This is the universe that you are ranking.

3. To rank against another universe, select **Rank Against**, and type the identifier against which to rank, or click 📋🔍 to look up an identifier (see "Look Up Identifiers" on page 122), import a list (on page 122), import a screen (see "Import a Saved Screen" on page 122), or build a list (see "Build a Watchlist" on page 149).

If you do not select a universe against which to rank, then Thomson Reuters Spreadsheet Link ranks the universe that you are ranking against itself.

4. From the drop-down, select a **Quantile** for the universe against which you are ranking.

5. From the drop-down, select a **Statistic Currency**.

6. Under **Data Item Expression**, click **Click to Add Criteria**.
7. Click the drop-down arrow, and click **Look up a Data Item** (on page 149) or **Build an Expression** (see "Expression Builder" on page 53).

8. To assign a weight other than "1," click the cell in the Weight column, and type a new weight (1-100), and press **Enter**.
   The percentage updates.

9. To change the order from bottom to top or vice-versa, click the cell in the Order column, and select **Bottom** or **Top** from the drop-down.

10. To set how Multi-Factor Ranking handles data that returns a null value, click the cell in the Handling Null Data column, and make a selection.

11. Add up to nineteen more lines of criteria.

12. To delete a line of criteria, right-click the line, and click **Delete**.

13. To save the ranking, see **Save a Ranking** (see "Save a Ranking (Multi-Factor Ranking)" on page 151).

14. Click **Show Results**. For more information on working with results, see **Work with Results** (see "Work with Results (Multi-Factor Ranking)" on page 153).

15. To export your screen, click **Export**. To customize the export, see **Customize your Export** (see "Customize your Export (Multi-Factor Ranking)" on page 154).

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**Look Up Identifiers**

**To select identifiers**

1. Click **Find**.

2. Click **Select an Identifier**.

3. From the adjacent drop-down, select **Starts With**, **Contains**, or **Is Exactly**.

4. In the textbox, type all or part of the identifier your chose (for example, Micro).

5. To filter your search further, see **Advanced Options for Looking up a Public Company** (see "Advanced Options for Looking up a Public Company (Identifier Lookup)" on page 31) **or** **Advanced Options for Looking up a Private Company** (see "Advanced Options for Looking up a Private Company or Public and Private Companies (Identifier Lookup)" on page 32) (if applicable).

6. Click **Show Results**.

7. If applicable, click the arrows in the Search Results box to view security- and quote-level information.

8. To view more information in a pop-up, select a company, right click and click **Get Information**.

9. Click **Add**.

10. When you are finished adding constituents, click **Close**.

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**Import a List**

**To import a list**

1. Click **Find**.

2. Click **Import Saved List**.

3. From the **Search** drop-down, select a search type.

4. From the **Keyword** drop-down, select **Starts With**, **Contains**, or **Is Exactly**.

5. Type all or part of a name in the textbox.

6. Click **Go**.

7. Select a result from the **Search Results** box. The **Constituents** section populates based on the result item.
• To sort results by a category other than name, click the appropriate column head. To reverse the order, click the column head again.
• To view or hide index details or identifiers (constituent information on the right-hand side), click the corresponding [ ].

1. To start a new search, click New Search.
2. Click OK.

Import a Saved Screen

To import a saved screen

1. Click [ ].
2. Click Import Saved Screen.
3. To search for a screen by browsing, click the appropriate folder in the left pane in the Open Screen dialog.
4. To search for a screen by name, type all or part of the name in the Search box, and click the magnifying glass.
5. Click to highlight the screen you would like for your report.
6. Click OK.

Build a Watchlist

1. Click [ ].
2. Click Build a New List.
3. Click Click to Add Identifiers and Shares.
4. Type an identifier (for example, IBM or MSFT), and press ENTER, or look up an identifier (see "Look Up Identifiers (Funded Portfolio Builder)" on page 116).
5. To re-sort, click a column header to sort by that column. Click again to reverse the order.
6. To add or delete a row, right click the row, and click New Row or Delete.
7. To save the watchlist, click , and see Save a Funded Portfolio or Watchlist (on page 117).
8. Click OK.

Look Up a Data Item

1. Locate a data item by name or category.

To locate a data item by category

1. From the Category area, click the arrow next to a category in the expandable tree.
2. To filter the list of data items in the Item area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
3. In the Item area, click a data item.
4. To set the parameters for the data item in the Parameters tab of the panel on the right, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
5. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).

To locate a data item by name

1. In the Item box, type a full or partial data item name.
2. In the Category area, click a category that has a positive number of results in parentheses.
3. To filter the list of data items in the Item area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
4. In the Item area, select a data item.
5. To set the parameters for the data item, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
6. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
7. To set a parameter for the data item, see Set Parameters for Data Items.
8. After locating a data item by name or category, click the Parameters tab in the right column of Data Item Lookup.

To locate a data item by category
1. From the Category area, click the arrow next to a category in the expandable tree.
2. To filter the list of data items in the Item area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
3. In the Item area, click a data item.
4. To set the parameters for the data item in the Parameters tab of the panel on the right, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
5. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).

To locate a data item by name
1. In the Item box, type a full or partial data item name.
2. In the Category area, click a category that has a positive number of results in parentheses.
3. To filter the list of data items in the Item area, see Filter Data Items (see "Filter Data Items (Data Item Lookup)" on page 8).
4. In the Item area, select a data item.
5. To set the parameters for the data item, see Set Parameters (see "Set Parameters (Data Item Lookup)" on page 9).
6. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
7. To set parameters for a data item, click the drop-down next to any of the settings. An asterisk denotes required information.

| Previous Calendar Interim (CI-1) |
| Current Calendar Interim (CI0) |
| Previous Calendar Year (CY-1) |
| Current Calendar Year (CY0) |
| Previous Fiscal Interim (FI-1) |
| Current Fiscal Interim (FI0) |
| Previous Year (FY-1) |
| Current Year (FY0) |
| Last Twelve Months (LTM) |
| (More...) |
| (Cell Reference Parameter...) |
| (Select Data Item...) |
| Reset |
Drop-down items may include the following items:

- **Quick Picks** - Commonly used parameters at the top of the drop-down that you can click to choose.
- **Select Parameter** - Allows you to enter a value through the Date & Period Builder (see “Date and Period Builder” on page 212) or a Select Parameter Value dialog.
- **Cell Reference Parameter** - Allows you to select a cell on your worksheet as the value for the parameter.
- **Select Data Item** - Calls up another Data Item dialog.
- **Reset** - Returns the parameter to its default value (blank if that was the default).

1. To set the date parameter, see Select a Date (see "Select a Date (Data Item Lookup)" on page 9).
2. To view detailed information about the data item, see Learn More about a Data Item (see "Learn More about a Data Item (Data Item Lookup)" on page 8).
3. Click OK.

**Save a Ranking (Multi-Factor Ranking)**

When you save a ranking, you save the data items and expressions in the ranking and the symbols or screen against which you ranked. Thomson Reuters Spreadsheet Link does not save the symbols or screen in your ranking universe.
To save a ranking

1. After you build a ranking (see "Build a Multi-Factor Ranking" on page 147), click ![Save](image).
2. In the **Name** box, type a *name* (50 characters maximum, alphanumeric characters or underscores only, no spaces) for your ranking.
3. To include a description for your ranking, type it in the **Description** box.
4. To select a security setting click **Security Level** drop-down.
5. Select a location for your screen, or click **New Folder**, type a new folder name, select a folder location, and click **OK**.
6. Click **OK**.

**Open a Saved Ranking (Multi-Factor Ranking)**

When you open a saved ranking, the data items or expressions that you saved and the symbols or screen against which you ranked are available for you to use. If you want to use the ranking that you open, you must type or select symbols or a screen for your ranking universe.

When you use this open ranking, you can use the same data items or expressions, or you can add, delete or edit (see "Build a Multi-Factor Ranking" on page 147) them.

If you click **Save**, the new data items and expressions overwrite the old ones, and Thomson Reuters Spreadsheet Link saves the ranking as the previous name. If you click **Save As**, you can create a separate ranking with a different name while keeping the old ranking intact.

**To open a ranking**

1. In the **Ranking Criteria** area of Multi-Factor Ranking, click ![Open...](image).
2. Click in the **Search** box, and type all or part of a ranking name.
3. In **Name** column, click a ranking to view its information in the right panel.
4. Click **OK**.
5. To reuse the ranking, select a universe to rank by typing an identifier or clicking ![🔍](image) in the **Identifier(s)** box to look up an identifier (see "Look Up Identifiers" on page 122), import a list (on page 122), import a screen (see "Import a Saved Screen" on page 122), or build a list (see "Build a Watchlist" on page 149).
6. Edit the universe against which you are ranking and/or criteria, or click **Show Results**. For more information on working with results, see Work with Results (see "Work with Results (Multi-Factor Ranking)" on page 153).
7. To export your screen, click **Export**. To customize the export, see Customize your Export (see "Customize your Export (Multi-Factor Ranking)" on page 154).

**Generate a Ranking (Multi-Factor Ranking)**

**To generate a ranking**

1. Build (see "Build a Multi-Factor Ranking" on page 147) or open (see "Open a Saved Ranking (Multi-Factor Ranking)" on page 152) a ranking.
2. Click **Show Results**.
3. Click **Ranking Criteria** ![2](image).
4. To display the results differently or export them, see Work with Results (see "Work with Results (Multi-Factor Ranking)" on page 153).
5. To export your ranking to a spreadsheet, click **Export**. To customize your export, see Customize Your Export (see "Customize your Export (Multi-Factor Ranking)" on page 154).
6. To reset all options, click ![New](image).
Delete a Ranking (Multi-Factor Ranking)

You can delete a ranking that you have saved. You cannot delete either a shared ranking that you did not create or a Thomson Reuters ranking.

To overwrite a ranking that you have run but not saved, click New in the Ranking Criteria area to build another ranking (see "Build a Multi-Factor Ranking" on page 147).

To delete a ranking
1. In the Ranking Criteria area, click Open.
2. In the Open Ranks dialog, click in the Search box, and type all or part of the name of a ranking.
3. In Name column, click a ranking to view its information in the left panel.
4. Click Delete.
5. Click Yes to confirm the deletion.
6. Click OK.

Work with Results (Multi-Factor Ranking)

After you build (see "Build a Multi-Factor Ranking" on page 147) and generate (see "Generate a Ranking (Multi-Factor Ranking)" on page 152) a multi-factor ranking, you can change the view of the results, change the currency of the results, export the results to a spreadsheet, save the results as a watchlist, or save the ranking.

In order to see the results, you must collapse the Ranking Criteria by clicking Ranking Criteria.

Save Results as a Watchlist (Multi-Factor Ranking)

While you are saving a ranking as a watchlist, the Multi-Factor Ranking box closes.

If you want to keep the ranking that you just generated, Thomson Reuters recommends that save the ranking first. Additionally, if you want to export the ranking (see "Customize your Export (Multi-Factor Ranking)" on page 154) to your spreadsheet, you must do so before you save the ranked symbols as a watchlist.

To save results as a watchlist
1. Generate a ranking (see "Generate a Ranking (Multi-Factor Ranking)" on page 152).
2. To generate a watchlist of fewer rows than the complete list of results, highlight the row or rows that you would like to save as a watchlist.
3. In the Results area, click the down arrow next to Save to List.
4. Click All Rows or Selected Rows.
5. To save (see "Save a Ranking (Multi-Factor Ranking)" on page 151) the ranking, click Yes.
6. Click Save As...
7. In the Name box, type a name (50 characters maximum, alphanumeric characters or underscores only, no spaces) for your watchlist.
8. To include a description for your watchlist, type it in the Description box.
9. To select a security setting click Security Level drop-down.
10. Select a location for your ranking, or click New Folder, type a new folder name, select a folder location, and click OK.
11. Click Close.
Change Results Display (Multi-Factor Ranking)

To change the results display
1. Generate a ranking (see “Generate a Ranking (Multi-Factor Ranking)” on page 152).
2. To view the results and collapse the criteria area, click
   
   **Ranking Criteria**

3. To sort the results by one column alphabetically or numerically, click the column heading. To reverse, click the column heading again.
4. To add items as columns to your results, click **Add Items as Columns**.
   a. To add columns from Multi-Factor Ranking, select the columns, and click **Move Up** or **Move Down**.
   b. To add a column of a new data item, click **Add Items** (see “Look Up a Data Item” on page 149), and click **Add in the Data Item Dialog**.
   c. **Click OK**.
5. To change the currency of the results, make a new selection from the **Currency** drop-down in the **Results** area.
6. To change the identifier in the results, make a new selection from the **Identifier Type** drop-down in the **Results** area.

Customize your Export (Multi-Factor Ranking)

You can customize your export and defaults for future exports to Excel.

To customize export settings
1. After building (see "Build a Multi-Factor Ranking" on page 147) and generating (see "Generate a Ranking (Multi-Factor Ranking)" on page 152) a multi-factor ranking, click on the Excel spreadsheet where you would like to export your data.
2. To include a title that appears at the top of the exported data, type a title in the **Title** field of the **Results** area.
3. **Click the Export drop-down arrow, and choose Export As**.
4. To export identifiers other than those in the ranking universe, click and search for a new identifier (see "Look Up Identifiers" on page 122), and click **OK**.
5. Make selections from the **Calculation Type** and **Headers** drop-downs.
6. To make the headings in the exported content bold, select **Format Headings**.
7. To include the breakpoint report in the exported content, select **Breakpoint Report** (see "Breakpoint Reports (Multi-Factor Ranking)" on page 154).
8. To include the error log in the exported content, select **Error Log** (see "Error Logs (Multi-Factor Ranking)" on page 155).
9. Select if you would like to keep these settings as defaults when exporting data.
10. To view the options every time you export, select Always show these settings when exporting data.
11. **Click OK** to export to Excel.

Breakpoint Reports (Multi-Factor Ranking)

Breakpoint reports contain the following information:

- Name of Universe Being Ranked Against
- Rank Type Bins
- Each Data Item Used in Ranking

Thomson Reuters Spreadsheet Link sorts breakpoint reports by the bin values from 1 to the Rank Type total (4, 5, 10, and 100). There is no breakpoint report for a 1 to N rank report.
Error Logs (Multi-Factor Ranking)

Error logs include the following fields:

- Entity Identifier (by default Thomson Ticker)
- Entity Name
- Error Reason

A record is part of the error log if it meets the following criteria:

1. Thomson Reuters Spreadsheet Link drops an entity because it meets the criteria for being null, and you have selected for Multi Factor Ranking to exclude null entities.
2. The sector is null.

Invalid tickers or missing entity names that meet the above two criteria appear as NA in the error log.
Chapter 14  Proprietary Data Manager

Proprietary Data Manager lets you upload your company's proprietary or custom data, including text, calculations, or other values so that you can use them in your workbooks.

Create Data Items (Proprietary Data Manager)

With custom data items you can create data items not covered by Thomson Reuters and use your own values for the items that you create.

To create a data item

1. On the Thomson Reuters tab in the Build group, click Proprietary Data.
2. In Proprietary Data Manager, click Import Data in the left navigation pane, and click New.
3. In the Create New Proprietary Data Item dialog, type a display name and a code (see "Illegal Characters (Proprietary Data Manager)" on page 157) for your data item.
4. From the drop-down, select a type of data (see "Data Types (Proprietary Data Manager)" on page 157).
5. If you are creating a data item with a numeric value, select whether you want the value to do nothing, multiply, or divide if the stock splits. You can also select None.
   If you select Multiply or Divide, you can set the Adjustment (see "Adjustment (Parameter)" on page 15) parameter (see "Set Parameters (Data Item Lookup)" on page 9) in Data Item Lookup (on page 7). If you select None, the Adjustment parameter does not appear in Data Item Lookup for your proprietary data item.
6. Click Done.
7. To import values (see "Import Values for Proprietary Data Items (Proprietary Data Manager)" on page 159) for the new data item, click Browse in the Proprietary Data Manager dialog.
8. To close the Proprietary Data Manager, click Close.
Data Types (Proprietary Data Manager)

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Type of value</th>
<th>Further information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash Rate</td>
<td>Number</td>
<td>Use for ratios and percentages related to currency or other cash rates</td>
</tr>
<tr>
<td>Classification</td>
<td>Text</td>
<td>Use for customizing or extending sectors or any other text values</td>
</tr>
<tr>
<td>Money</td>
<td>Number</td>
<td>Use for dollar amounts, like valuation</td>
</tr>
<tr>
<td>Number</td>
<td>Number</td>
<td>Use for ratios, percentages</td>
</tr>
<tr>
<td>Price</td>
<td>Number</td>
<td>Use for any price values</td>
</tr>
<tr>
<td>Text</td>
<td>Text</td>
<td>You can include a mix of letters and numbers</td>
</tr>
</tbody>
</table>

Illegal Characters (Proprietary Data Manager)

You cannot use these characters in the name or code of a proprietary data item:

<table>
<thead>
<tr>
<th>Character</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;</td>
<td>quotation marks</td>
</tr>
<tr>
<td>*</td>
<td>asterisk</td>
</tr>
<tr>
<td>%</td>
<td>percent</td>
</tr>
<tr>
<td>'</td>
<td>grave accent</td>
</tr>
<tr>
<td>~</td>
<td>tilde</td>
</tr>
<tr>
<td>[</td>
<td>opening square bracket</td>
</tr>
<tr>
<td>]</td>
<td>closing square bracket</td>
</tr>
<tr>
<td>Character</td>
<td>Name</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>{</td>
<td>opening curly bracket</td>
</tr>
<tr>
<td>}</td>
<td>closing curly bracket</td>
</tr>
<tr>
<td>+</td>
<td>plus sign</td>
</tr>
<tr>
<td>,</td>
<td>comma</td>
</tr>
<tr>
<td>:</td>
<td>colon</td>
</tr>
<tr>
<td>;</td>
<td>semi-colon</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;</td>
<td>less than sign</td>
</tr>
<tr>
<td>&gt;</td>
<td>greater than sign</td>
</tr>
<tr>
<td>!</td>
<td>exclamation point</td>
</tr>
<tr>
<td>#</td>
<td>number sign</td>
</tr>
<tr>
<td>@</td>
<td>at sign</td>
</tr>
<tr>
<td>^</td>
<td>caret</td>
</tr>
<tr>
<td>-</td>
<td>hyphen</td>
</tr>
<tr>
<td>?</td>
<td>question mark</td>
</tr>
<tr>
<td>`</td>
<td>apostrophe</td>
</tr>
<tr>
<td>=</td>
<td>equal sign</td>
</tr>
<tr>
<td>&amp;</td>
<td>ampersand</td>
</tr>
<tr>
<td>(</td>
<td>opening parenthesis</td>
</tr>
<tr>
<td>)</td>
<td>closing parenthesis</td>
</tr>
</tbody>
</table>
### Import Values for Proprietary Data Items (Proprietary Data Manager)

You can import data from an Excel (.xls or .xlsx), comma-separated-value (.csv), or text (.txt) file. The delimiter in a text file can be a tab, comma, space, semicolon, or user-defined delimiter.

When you finish creating a data item, it appears in the Proprietary Data Manager dialog in the Data Item field. The < > File Format box of the Proprietary Data Manager dialog displays the requisite columns (values), order, and format for that type of data item. The file that you import must have the required columns in that order and format.

Close files before you import them.

After you import values for a data item, you can use that data item and set parameters for it in Data Item Lookup (on page 7).

#### To import values for a data item

1. In Proprietary data manager, create (see "Create Data Items (Proprietary Data Manager)" on page 156) or search for (see "Search for Proprietary Data Items (Proprietary Data Manager)" on page 160) a data item.
2. Click Browse.
3. Browse for the Excel (.xls or .xlsx), comma-separated value (.csv), or text (.txt) file that contains the values that you want to associate with that data item, and click Open.
4. Click Next.
5. If you are importing from a text (.txt) file, select a delimiter.
6. Select whether the first row contains column names.
7. Select whether the symbols represent their value as of the date associated with them.
8. If the content in the Data Preview is not the content you want or the format is not valid, adjust the source file, and click Reload File.
9. If the content in the Data Preview is the content you want and the format is valid, click Next.
10. If the Preview shows an error, adjust the source file, click Reload File, and click Next.
11. If the Validation shows an error, right-click the error row.
   a. To exclude that row only, click Exclude Row.
   b. To exclude all rows with errors, click Exclude All Error Rows.
   c. To replace the symbol, click Set Symbol, and search in the Symbol Lookup Window (see "Symbol Lookup (Proprietary Data Manager)" on page 160).
12. Click Next.
13. If you cannot confirm all the information, click Back. If you confirm that the information is correct, click Next.
14. Click Done.
15. To add another proprietary data item or to add other values for the same data item (for example, daily, weekly, or monthly), repeat all the steps above.
16. To close the Proprietary Data Manager, click Close.
Search for Proprietary Data Items (Proprietary Data Manager)

You can search for a proprietary data item when you are importing data or when you are making a change to a proprietary data item.

To search for a data item to add data to it
1. In Proprietary Data Manager, click Import Data in the left navigation pane.
2. In the Data Item field, type the name of a data item.
3. Click to select a name.

To search for a data item to delete it change the split adjustment type, or overwrite values
1. In Proprietary Data Manager, click Manage Data.
2. In the Search field, type all or part of the name of the data item.
3. Click to highlight the item that you want to delete or edit.

Symbol Lookup (Proprietary Data Manager)

1. In the Symbol Lookup Window, select whether you want to search by symbol, issuer (company), or issue name (full name of stock).
2. In the Search for field, type the symbol, issuer, or issuer name for which you want to search.
3. Make a selection from the Search Type drop-down.
4. To include a type of identifier in you search, make a selection from the Identifier drop-down.
5. To include a date as of which the symbol was valid, click the calendar in As of Date, and select a date.
6. Click .
7. Select the result that you want to include in your spreadsheet.
8. Click OK.

Manage Proprietary Data Items (Proprietary Data Manager)

After you create data items (see "Create Data Items (Proprietary Data Manager)" on page 156), you can delete them, change their names or split adjustment method, or refresh the list of all proprietary data items.

In the same place that you manage your proprietary data items, you can also click New to create a data item. See step three to the end of Create Data Items (see "Create Data Items (Proprietary Data Manager)" on page 156).

Delete a Data Item (Proprietary Data Manager)

To delete a data item
1. In Proprietary Data Manager, click Manage Data.
2. In the Search field, type all or part of the name of the data item.
3. Click to highlight the item that you want to delete or edit.
4. Click Delete.
5. To close the Proprietary Data Manager, click Close.

Edit a Data Item (Proprietary Data Manager)

To change the name and/or split adjustment method of a proprietary data item
1. In Proprietary Data Manager, click Manage Data.
2. In the Search field, type all or part of the name of the data item.
3. Click to highlight the item that you want to delete or edit.
4. Click **Edit**.
5. Type a new *name* and/or select a different **split adjustment type**.
6. Click **Done**.
7. To close the **Proprietary Data Manager**, click **Close**.

**Refresh the Values of a Data Item (Proprietary Data Manager)**

If you or a colleague add a data item, but you do not see it in the list of data items, you can refresh the list to see if the data item appears.

**To refresh the values of a data item**
1. In **Proprietary Data Manager**, click **Manage Data**.
2. In the **Search** field, type all or part of the *name* of the data item.
3. If the name of the item for which you are searching is not in the list, clear the **Search** field.
4. Click **Refresh**.
5. Repeat steps 1-2.
6. To close the **Proprietary Data Manager**, click **Close**.

**Export (Proprietary Data Manager)**

To help manage your proprietary data items, you can export the sample input file format or a list of saved items to your spreadsheet. All the rows and columns in the preview export to the spreadsheet.

**To export the sample input file format**
1. On the **Thomson Reuters** tab in the **Build** group, click **Proprietary Data**.
2. In **Proprietary Data Manager**, click **Import Data** in the left navigation pane.
3. On your spreadsheet, click the starting cell for the data that you want to export.
4. In **Proprietary Data Manager**, right-click any cell in the **Sample Input File Format**, and click **Export to Excel**.

**To export a list of saved proprietary data items**
1. In **Proprietary Data Manager**, click **Manage Data**.
2. To export a filtered list, type all or part of the *name* of the data items in the **Search** field.
3. On your spreadsheet, click the starting cell for the data that you want to export.
4. In **Proprietary Data Manager**, right-click any cell in the list of data items, and click **Export to Excel**.
Chapter 15  Linking

Linking provides a connection between Microsoft Excel and PowerPoint or Word in which PowerPoint or Word can display data, tables, charts, or other content that you create in Excel.

You can export from Excel to PowerPoint or Word and then manage your links and refresh the content from either Excel or the target application.

You must save your Excel spreadsheet, Word document, and/or PowerPoint presentation before you can use Linking.

Import and Export Content (Linking)

Import into PowerPoint from Excel (Linking)

While you are working in a saved PowerPoint presentation or Word document, you can import content from an Excel workbook. You can link multiple individual, non-contiguous cells from Excel to PowerPoint or Word into a single text box. You can also import charts, tables, and text from Excel into a PowerPoint slide or onto a placeholder or the cursor location of a Word document.

Before you import, you must decide whether you want to import part of the contents of an Excel worksheet, such as a selection of cells or an object on a worksheet, such as a graph or chart, onto the PowerPoint slide or Word document and whether you want to be able to edit the content in the target application.

If you want to import an object from an Excel worksheet, you can perform a quick import of a that object to PowerPoint (see "Perform a Quick Import of an Object from Excel into PowerPoint (Linking)" on page 163) or Word (see "Perform a Quick Import of an Object from Excel into Word (Linking)" on page 165) using Import Selection, and the content imports as you set your default in Options (see "Set Default Link Options (Linking)" on page 168).

Alternatively, you can import objects from an Excel worksheet while retaining the ability to update the content either in the target application or in Excel. To do so, see Import a Chart, Text, Graph, or Named Range into PowerPoint from Excel (see "Import a Chart, Text, Graph, or Named Range into PowerPoint from Excel (Linking)" on page 162) or Import a Chart, Text, Graph, or Named Range into Word from Excel (see "Import a Chart, Text, Graph, or Named Range into Word from Excel (Linking)" on page 164), and select to import the selection as embedded content.

Import a Chart, Text, Graph, or Named Range into PowerPoint from Excel (Linking)

You can import charts, tables, numeric values, and text from Excel into a PowerPoint slide. You can import objects or select cells from Excel.

To import objects from a worksheet to PowerPoint from Excel
1. Open the Excel worksheet that you want to import into PowerPoint.
2. Open the PowerPoint presentation and slide to which you want to import the Excel content.
3. To import to PowerPoint 2003, go to the Linking menu, point to Import, and click Import.
4. To import to PowerPoint 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow below Import, and click Import.
5. In the Excel worksheet, name a range (see "Set Standardized Names (Linking)" on page 169).
6. In PowerPoint in the Import Excel Object dialog, select the spreadsheet from the Select a file drop-down.
   If it is not in the drop-down, click Browse, and, in the Select File dialog, browse for the file, click Open, and then select it from the drop-down.
7. Click the down arrow next to Link Options, and select link options (see "Link Options (Linking)" on page 167).
8. Click the arrow next to Select Objects, and select objects.
For more information on standard named ranges, see Set Standardized Names (see “Set Standardized Names (Linking)” on page 169).

9. If you have updated, added, or removed content in the Excel spreadsheet, click Update Previews to synchronize the object preview window with the selected workbook.

10. Click the thumbnail of the object that you want to import.

11. If you checked Create Link (see “Link Options (Linking)” on page 167), select the format that you want for the object when it is in PowerPoint.

12. Click Import.

13. In PowerPoint, view, size, and position the results.

Import a Table into PowerPoint from Excel (Linking)

You can import a table from Excel into a PowerPoint slide.

To create a table in Excel
1. In Excel, highlight the cells that you would like to make into a table.
2. Press Ctrl + l (lowercase "L").
3. In the Create Table dialog, confirm or type the cell range.
4. Select whether the table has headers.
5. Click OK.

To import a table into PowerPoint from Excel
1. Open the Excel worksheet with the table that you want to import into PowerPoint.
2. Open the PowerPoint presentation and slide to which you want to import the Excel table.
3. To import to PowerPoint 2003, go to the Linking menu, point to Import, and click Import.
4. To import to PowerPoint 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow below Import, and click Import.
5. In PowerPoint in the Import Excel Object dialog, select the spreadsheet from the Select a file drop-down.
   If it is not in the drop-down, click Browse, and, in the Select File dialog, browse for the file, click Open, and then select it from the drop-down.
6. Click the down arrow next to Link Options, and select link options (see “Link Options (Linking)” on page 167).
7. Click the arrow next to Select Objects, and select Tables.
8. If you have updated, added, or removed content in the table in Excel, click Update Previews to synchronize the object preview window with the selected workbook.
9. Click the thumbnail of the table that you want to import.
10. If you checked Create Link (see “Link Options (Linking)” on page 167), select the format that you want for the object when it is in PowerPoint.
11. Click Import.
12. In PowerPoint, view, size, and position the results.

Perform a Quick Import of an Object from Excel into PowerPoint (Linking)

If you want to import an object from an Excel worksheet, you can perform a quick import of a that object to PowerPoint (see “Perform a Quick Import of an Object from Excel into PowerPoint (Linking)” on page 163) or Word (see “Perform a Quick Import of an Object from Excel into Word (Linking)” on page 165) using Import Selection, and the content imports as you set your default in Options (see “Set Default Link Options (Linking)” on page 168).

To import a selection of cells and be able to update the content in PowerPoint, see Import a Chart, Text, Graph, or Named Range into PowerPoint from Excel (see “Import a Chart, Text, Graph, or Named Range into PowerPoint from Excel (Linking)” on page 162).
To import the current selection or object on a worksheet into PowerPoint from Excel
1. Open the Excel worksheet that you would like to import into PowerPoint, and highlight the portion that you would like to import.
2. Open the PowerPoint presentation and slide to which you want to import the Excel content.
3. To import to PowerPoint 2003, go to the Linking menu, point to Import, and click Import Excel Selection.
4. To import to PowerPoint 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow below Import, and click Import Excel Selection.
5. In PowerPoint, view, size, and position the results.

Import into Word from Excel (Linking)
While you are working in a saved PowerPoint presentation or Word document, you can import content from an Excel workbook. You can link multiple individual, non-contiguous cells from Excel to PowerPoint or Word into a single text box. You can also import charts, tables, and text from Excel into a PowerPoint slide or onto a placeholder or the cursor location of a Word document.

Before you import, you must decide whether you want to import part of the contents of an Excel worksheet, such as a selection of cells or an object on a worksheet, such as a graph or chart, onto the PowerPoint slide or Word document and whether you want to be able to edit the content in the target application.

If you want to import an object from an Excel worksheet, you can perform a quick import of a that object to PowerPoint (see "Perform a Quick Import of an Object from Excel into PowerPoint (Linking)" on page 163) or Word (see "Perform a Quick Import of an Object from Excel into Word (Linking)" on page 165) using Import Selection, and the content imports as you set your default in Options (see "Set Default Link Options (Linking)" on page 168).
Alternatively, you can import objects from an Excel worksheet while retaining the ability to update the content either in the target application or in Excel. To do so, see Import a Chart, Text, Graph, or Named Range into PowerPoint from Excel (see "Import a Chart, Text, Graph, or Named Range into PowerPoint from Excel (Linking)" on page 162) or Import a Chart, Text, Graph, or Named Range into Word from Excel (see "Import a Chart, Text, Graph, or Named Range into Word from Excel (Linking)" on page 164), and select to import the selection as embedded content.

Import a Chart, Text, Graph, or Named Range into Word from Excel (Linking)
You can import charts, tables, numeric values, and text from Excel into a Microsoft Word document. You can import objects or select cells from Excel.

If you create a placeholder in Word for the object, you can replace the content in that exact place of the document later.

To import objects from a worksheet into Word from Excel
1. Open the Excel worksheet that you want to import into Word.
2. In the Excel worksheet, name a range (see "Set Standardized Names (Linking)" on page 169).
3. Open the Word document to which you want to import the Excel content.
4. To insert a placeholder in a Word 2003 document, go to the Linking menu, and click Insert Placeholder.
5. To insert a placeholder in a Word 2007 or 2010 document, go to the Thomson Reuters Linking group on the Insert tab, and click Insert Placeholder.
6. To import to Word 2003, on the Linking menu, point to Import, and click Import.
7. To import to Word 2007 or 2010, in the Thomson Reuters Linking group on the Insert tab, click the arrow below Import, and click Import.
8. In Word in the Import Excel Object dialog, select the spreadsheet from the Select a file drop-down.
   If it is not in the drop-down, click Browse, and, in the Select File dialog, browse for the file, click Open, and then select it from the drop-down.
9. Click the down arrow next to Link Options, and select link options (see "Link Options (Linking)" on page 167).
10. Click the arrow next to Select Objects, and select objects.
For more information on standard named ranges, see Set Standardized Names (see “Set Standardized Names (Linking)” on page 169).

11. If you have updated, added, or removed content in the Excel spreadsheet, click Update Previews to synchronize the object preview window with the selected workbook.

12. Click the thumbnail of the object that you want to import.

13. If you checked Create Link (see “Link Options (Linking)” on page 167), select the format that you want for the object when it is in Word.

14. Click Import.

15. In PowerPoint, view, size, and position the results.

**Import a Table into Word from Excel (Linking)**

You can import a table from Excel into a Word document.

**To create a table in Excel**
1. In Excel, highlight the cells that you would like to make into a table.
2. Press Ctrl + l (lowercase “L”).
3. In the Create Table dialog, confirm or type the cell range.
4. Select whether the table has headers.
5. Click OK.

**To import a table into Word from Excel**
1. Open the Excel worksheet with the table that you want to import into PowerPoint.
2. Open the Word document to which you want to import the Excel table.
3. To import to Word 2003, go to the Linking menu, point to Import, and click Import.
4. To import to Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow below Import, and click Import.
5. In Word in the Import Excel Object dialog, select the spreadsheet from the Select a file drop-down. If it is not in the drop-down, click Browse, and, in the Select File dialog, browse for the file, click Open, and then select it from the drop-down.
6. Click the down arrow next to Link Options, and select link options (see “Link Options (Linking)” on page 167).
7. Click the arrow next to Select Objects, and select Tables.
8. If you have updated, added, or removed content in the table in Excel, click Update Previews to synchronize the object preview window with the selected workbook.
9. Click the thumbnail of the object that you want to import.
10. If you checked Create Link (see “Link Options (Linking)” on page 167), select the format that you want for the object when it is in Word.
11. Click Import.
12. In Word, view, size, and position the results.

**Perform a Quick Import of an Object from Excel into Word (Linking)**

If you want to import an object from an Excel worksheet, you can perform a quick import of a that object to PowerPoint (see “Perform a Quick Import of an Object from Excel into PowerPoint (Linking)” on page 163) or Word (see “Perform a Quick Import of an Object from Excel into Word (Linking)” on page 165) using Import Selection, and the content imports as you set your default in Options (see “Set Default Link Options (Linking)” on page 168).

To import a selection of cells and be able to update the content in Word, see Import a Chart, Text Graph, or Named Range into Word from Excel (see “Import a Chart, Text, Graph, or Named Range into Word from Excel (Linking)” on page 164).
To import the current selection of a worksheet into Word from Excel
1. Open the Excel worksheet that you would like to import into Word, and highlight the portion that you would like to import.
2. Open the Word document to which you want to import the Excel content.
3. Create or select a placeholder in the document.
4. To import to Word 2003, go to the Linking menu, point to Import, and click Import Excel Selection.
5. To import to Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow below Import, and click Import Excel Selection.
6. In Word, view, size, and position the results.

Size Linked Objects to Fit into Word Text Boxes and Tables (Linking)
When you import a linked object, such as a graph, into a text box or table cell in Word and manually resize it, sometimes you are not able to size or fit the linked object appropriately. If you click Size to Fit, Thomson Reuters Spreadsheet Link sizes the linked object to fit the text box or table cell.

To Size Linked Objects to Fit into Word Text Boxes and Tables
1. In the Word document, click the linked object (see "Import into Word from Excel (Linking)" on page 164) that is not sizing correctly.
2. In Word 2003, go to the Linking menu and click Size to Fit.
3. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Spreadsheet Link group on the Insert tab, and click Size to Fit.

Export from Excel (Linking)
While you are working in a saved Excel workbook, you can export charts, tables, and text from an Excel workbook to a saved PowerPoint presentation, a placeholder in a saved Word document, or at the cursor of a saved Word document. You can link multiple individual, non-contiguous cells from Excel to PowerPoint or Word into a single text box.

Export from Excel to PowerPoint (Linking)
From within Excel, you can add content and export into a PowerPoint presentation.

To export from Excel to PowerPoint
1. Open the Excel worksheet that you want to export to PowerPoint.
2. In Excel 2003, on the Linking menu, click Export.
3. In Excel 2007 or 2010, go to the Thomson Reuters Spreadsheet Link group on the Insert tab, and click Export.
4. In the Export Excel Object dialog, click Browse, and, in the Select File dialog, browse for the PowerPoint presentation, click Open, and ensure that you see it in the drop-down next to the Browse button.
5. To add a new slide to the presentation, click New Slide, select a pre-defined or native slide, and click OK.
6. If you have updated, added, or removed slides in the PowerPoint presentation, click Update Previews to synchronize the object preview window with the selected presentation.
7. Click the down arrow next to Link Options, and select link options (see "Link Options (Linking)" on page 167).
8. To set a standard name for a range of cells, select the cell/group of cells and then click Apply Name (see "Set Standardized Names (Linking)" on page 169).
9. Highlight the cell(s), table, or chart that you want to export.
10. Click the thumbnail of the slide to which you want to export. To export to a placeholder in the slide, click the placeholder in the thumbnail.
11. To open the slide, double click the thumbnail.
13. In PowerPoint, view, size, and position the results.

Export from Excel to Word (Linking)

From within Excel, you can add content and export into a Word document.

To export from Excel to Word

1. Open the Excel worksheet that you want to export to Word.
2. In Excel 2003, on the Linking menu, click Export.
3. In Excel 2007 or 2010, go to the Linking group on the Thomson Reuters tab, and click Export.
4. In the Export Excel Object dialog, click Browse, and, in the Select File dialog, browse for the Word document, click Open, and ensure that you see it in the drop-down next to the Browse button.
5. If you have updated, added, or removed placeholders, pages, or other content in the Word document, click Update Previews to synchronize the object preview window with the selected presentation.
6. Click the downsiden arrow next to Link Options, and select link options (see "Link Options (Linking)" on page 167).
7. To set a standard name for a range of cells, select the cell/group of cells and then click Apply Name (see "Set Standardized Names (Linking)" on page 169).
8. Highlight the cell(s), table, or chart that you want to export.
9. Click the thumbnail of the placeholder and page to which you want to export. If your document has no placeholders or if you want to export the Excel content at the cursor in the Word document, open the Word document to ensure the cursor is where you want it, and, in the Export Excel Object dialog in Excel, select Export at Cursor.
11. In Word, view, size, and position the results.

Link Options (Linking)

<table>
<thead>
<tr>
<th>Linking Option</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Link</td>
<td>Links the content. If you edit the content in Excel and refresh the content in PowerPoint or Word, the content updates in the slide or document.</td>
</tr>
<tr>
<td>Picture</td>
<td>You cannot edit the linked content, but you can edit it as a picture in PowerPoint or Word.</td>
</tr>
<tr>
<td>Word Table</td>
<td>You can edit linked content that is in a Word Table when you are in Word. It appears as a table in Word.</td>
</tr>
<tr>
<td>Embedded</td>
<td>You can edit linked content that is embedded when you are in PowerPoint or Word. It appears as an Excel spreadsheet with gridlines.</td>
</tr>
<tr>
<td>Text</td>
<td>This is the only selection when you are going to export a single cell from Excel to PowerPoint or Word.</td>
</tr>
<tr>
<td>Chart</td>
<td>To export a chart from Excel to PowerPoint or Word, highlight the chart on the spreadsheet, and select Chart.</td>
</tr>
</tbody>
</table>
Lock Link

If you update the content in Excel, the content does not update in PowerPoint or Word.

To set default link options, see Set Default Link Options (see "Set Default Link Options (Linking)" on page 168).

Set Default Link Options (Linking)

You can set the default for source file charts and tables to export to or import into PowerPoint and Word as a specific link option (see "Link Options (Linking)" on page 167). Even though you are selecting a default, you can change how to export or import each chart or table when you create the link for it.

The default determines how Linking imports and exports objects with the Import Selected functionality in PowerPoint (see "Perform a Quick Import of an Object from Excel into PowerPoint (Linking)" on page 163) and Word (see "Perform a Quick Import of an Object from Excel into Word (Linking)" on page 165).

To set the default link option for charts and tables

1. In PowerPoint or Word 2003, go to the Linking menu, point to Edit, and click Options. In Excel 2003, on the Thomson Reuters menu, point to Linking, then to Edit, and click Options.
   In PowerPoint, Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow next to Edit, and click Options. In Excel 2007 or 2010, in the Linking group on the Thomson Reuters tab, click the arrow next to Edit, and click Options.
2. In the Linking Options dialog under Import/Export Options, in the Chart row, select the default option for exporting to or importing into PowerPoint.
3. In the Linking Options dialog under Import/Export Options, in the Chart row, select the default option for exporting to or importing into Word.
4. In the Table row, select the default option for exporting to or importing into for exporting to or importing into PowerPoint.
5. In the Table row, select the default option for exporting to or importing into for exporting to or importing into Word.
6. Click OK.

Refresh Links (Linking)

If you update content in a source Excel workbook, you must refresh the links in order to have the updates reflected in the target presentation or document. Unlike native Office links, links do not refresh automatically. You can refresh linked Excel content from either Excel or the target application.

If you have moved or renamed either the Excel worksheet, Excel workbook, the target presentation or the affected slide in it, or the Word document or the affected content in the Word document, you cannot refresh the links. In these cases, you must re-create the links (see "Import and Export Content (Linking)" on page 162).

You can also refresh links from Manage Links (see "Refresh Links while Managing Content (Linking)" on page 171).

To refresh linked content on a slide or in a document

1. Select the affected content on the slide in the presentation or in the document.
2. In PowerPoint or Word 2003, go to the Linking menu, point to Refresh, and click Refresh Selected.
3. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Spreadsheet Link group on the Insert tab, click the arrow below Refresh, and click Refresh Selected.
   A message appears when Thomson Reuters Spreadsheet Link has finished updating the links.

To refresh an entire slide in PowerPoint

1. Select the slide in the presentation.
2. In PowerPoint or Word 2003, go to the Linking menu, point to Refresh, and click Refresh Slide.
3. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Spreadsheet Link group on the Insert tab, click the arrow below Refresh, and click Refresh Slide.
   A message appears when Thomson Reuters Spreadsheet Link has finished updating the links.

To refresh an entire page in Word
1. Select the page in the document.
2. In PowerPoint or Word 2003, go to the Linking menu, point to Refresh, and click Refresh Page.
3. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Spreadsheet Link group on the Insert tab, click the arrow below Refresh, and click Refresh Page.
   A message appears when Thomson Reuters Spreadsheet Link has finished updating the links.

When you click Refresh All, all source files open and links in the destination presentation or document (and only that target destination or document) refresh, even if they are in multiple Excel files.

To refresh all the links in the current workbook, presentation, or document
1. Open the workbook, presentation, or document.
2. In PowerPoint or Word 2003, go to the Linking menu, point to Refresh, and click Refresh All.
3. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Spreadsheet Link group on the Insert tab, click the arrow below Refresh, and click Refresh All.
   A message appears when Thomson Reuters Spreadsheet Link has finished updating the links.

Set Standardized Names (Linking)

The Import Excel Object dialog in PowerPoint and Word displays all charts, Excel tables, and named ranges. You can also filter on named ranges that match a standardized naming convention. You can view all named ranges versus standardized ranges. In Excel, you can apply standardized names so all items exported from Excel have standardized names, and you can filter on them in the Import Excel Object dialog in PowerPoint and Word.

To create a standardized name for a cell or range in Excel
1. Select at least one cell.
2. In PowerPoint or Word 2003, go to the Linking menu and click Apply Name. In Excel 2003, on the Thomson Reuters menu, point to Linking, and click Apply Name.
3. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click Apply Name. In Excel 2007 or 2010, in the Linking group on the Thomson Reuters tab, click Apply Name.
   If you create a named range from a single cell, the range name Linking_Text_X, in which X is an incremental number, appears on the upper left of the spreadsheet.
   If you create a named range from multiple adjacent cells, the range name Linking_Range_X, in which X is an incremental number, appears on the upper left of the spreadsheet.

Manage Links (Linking)

After you create links between Excel and PowerPoint or Word, you can break links, clean up broken links, create a report on links, lock or unlock links, refresh links, or redirect links. You can do this for a single link or multiple links at one time.

Break Links (Linking)

Breaking links permanently deletes the connection between Excel and PowerPoint or Word that allows Linking to update or refresh the linked content. Breaking the link only removes the link. It does not delete any content.

To break links
1. Open the PowerPoint presentation, Word document, or source Workbook in which you want to break links.
2. In PowerPoint or Word 2003, go to the **Linking** menu and click **Manage Links**. In Excel 2003, on the Thomson Reuters menu, point to **Linking**, and click **Manage Links**.

3. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click **Manage Links**. In Excel 2007 or 2010, in the **Linking** group on the Thomson Reuters tab, click **Manage Links**.

4. To break all the links, click **Select All**.

5. If you have multiple categories of links, make a selection from the **Group By** drop-down and/or the **Filter By** drop-down. To break all the links of one category, select the category with all the links that you want to break. For example, to break all the table links, select **Table**.

6. To break individual links, select each link that you want to break.

7. At the bottom of the **Managed Linked Content** dialog, click **Break Selected Links**.

8. Click **Yes** to confirm.

9. Click **Close**.

### Delete Broken Links (Linking)

You can delete, or clean, broken links between a workbook and a presentation or document. Broken links are linked files that you have deleted or moved from their original location.

**To delete broken links**

1. Open the PowerPoint presentation, Word document, or source Workbook in which you want to delete broken links.

2. In PowerPoint or Word 2003, on the **Linking** menu, click **Manage Links**. In Excel 2003, on the Thomson Reuters menu, point to **Linking**, and click **Manage Links**.

3. In PowerPoint or Word 2007 or 2010, in the Thomson Reuters Linking group on the Insert tab, and click **Manage Links**. In Excel 2007 or 2010, in the **Linking** group on the Thomson Reuters tab, click **Manage Links**.

4. To delete all broken links, click **Select All**. In Excel 2007 or 2010, in the **Linking** group on the Thomson Reuters tab, click **Manage Links**.

5. If you have multiple categories of links, make a selection from the **Group By** drop-down and/or the **Filter By** drop-down. To delete all the links of one category, select the category with all the broken links that you want to delete. For example, to delete all the broken table links, select **Table**.

6. To delete individual broken links, select each link that you want to delete if it is broken.

7. At the bottom of the **Managed Linked Content** dialog, click **Clean Broken Links**.

8. Click **Yes** to confirm.

9. Click **Close**.
Generate a Report on Links (Linking)

You can generate a report on all the links in a workbook, document, or presentation. The report includes source information, destination information, and the state of each link with multiple sub-categories in each of those three areas.

When you generate a link report, it opens an Internet browser window and displays all the links between the workbook and the presentation or document.

To generate a report on all the links in a workbook, document, or presentation
1. Open the PowerPoint presentation, Word document, or source Workbook for which you want to generate a report on links.
2. In PowerPoint or Word 2003, go to the Linking menu and click Manage Links. In Excel 2003, on the Thomson Reuters menu, point to Linking, and click Manage Links.
4. At the bottom of the Managed Linked Content dialog, click Generate Link Report.
5. After viewing the report in the browser window, click Close at the bottom of the Managed Linked Content dialog.

Lock or Unlock Links (Linking)

You can lock or unlock multiple links at once. You cannot refresh or redirect locked links, but you can unlock the group to refresh or direct the links. If you want to lock some links and unlock others, you must first select either the links that you want to lock or the links that you want to unlock, and either lock or unlock those links. Then you can select the other set of links and perform the other action.

To lock or unlock links
1. Open the PowerPoint presentation, Word document, or source Workbook in which you want to lock or unlock links.
2. In PowerPoint or Word 2003, go to the Linking menu, and click Manage Links. In Excel 2003, on the Thomson Reuters menu, point to Linking, and click Manage Links.
4. To lock or unlock all the links, click Select All.
5. If you have multiple categories of links, make a selection from the Group By drop-down and/or the Filter By drop-down. To lock or unlock all the links of one category, select the category with all the links that you want to lock or unlock.
6. To lock or unlock individual links, select each link that you want to lock or unlock.
7. From the drop-down at the top of the Managed Linked Content dialog, select Lock Selected or Unlock Selected, and click Go.
8. After the system has locked the links, click OK to confirm.
9. Click Close.

Refresh Links while Managing Content (Linking)

1. Open the PowerPoint presentation, Word document, or source Workbook in which you want to refresh links.
2. In PowerPoint or Word 2003, go to the **Linking** menu and click **Manage Links**. In Excel 2003, on the **Thomson Reuters** menu, point to **Linking**, and click **Manage Links**.

3. In PowerPoint or Word 2007 or 2010, go to the **Thomson Reuters Linking** group on the **Insert** tab, and click **Manage Links**. In Excel 2007 or 2010, in the **Linking** group on the **Thomson Reuters** tab, click **Manage Links**.

4. To refresh all the links, click **Select All**.

5. If you have multiple categories of links, make a selection from the **Group By** drop-down and/or the **Filter By** drop-down. To refresh all the links of one category, select the category with all the links that you want to refresh.

   For example, to refresh all the Table links, select **Table**.

   ![Screenshot of Manage Links dialog]

   - **Check the box for Table.**
   - **Refresh the links.**
   - **Select the category you want to refresh.**

6. To refresh individual links, select each link that you want to refresh.

7. From the drop-down at the top of the **Managed Linked Content** dialog, select **Refresh Selected**, and click **Go**.

8. After the system has refreshed the links, click **OK** to confirm.

9. Click **Close**.

### Redirect Links (Linking)

In PowerPoint or Word, you can click **Redirect Group** to redirect the source of the links to a different workbook in a grouped selection. You can redirect only links that are in the same workbook.

**To redirect a group of links**

1. Open the PowerPoint presentation, Word document, or source Workbook in which you redirect links.

2. In PowerPoint or Word 2003, go to the **Linking** menu and click **Manage Links**.

3. In PowerPoint or Word 2007 or 2010, go to the **Thomson Reuters Linking** group on the **Insert** tab, and click **Manage Links**.

4. Make a selection from the **Group By** drop-down and/or the **Filter By** drop-down. To redirect all the links of one workbook, select the workbook with all the links that you want to redirect.

   In this example, the user wants to redirect all the links from a workbook called Test Book 5_pie chart.xlsx and selected the check box next to it.

   ![Screenshot of Redirect Group]

   - **Select the workbook to redirect.**
   - **Click Refresh Group.**
   - **After the system has refreshed the group of links, click OK to confirm.**
   - **Click Close.**

### Highlight All the Links in a Presentation or Document (Linking)

You can highlight all linked objects in a PowerPoint presentation or Word document to provide a quick visual outline of all of the objects that have source file links. If you import another linked object while the highlighting is on, Linking highlights the newly imported object. When you turn off the highlights, Linking removes them from all the objects in the presentation or document.

**To highlight all linked objects in a document**

1. Open the PowerPoint presentation or Word document in which you want to highlight linked objects.

2. In PowerPoint or Word 2003, on the **Linking** menu, click **Highlight**.
3. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click Highlight.
4. To turn off the highlights, click Highlight again.

The default highlight color is yellow, but you can change it.

To set the default color of the highlight
1. In PowerPoint or Word 2003, go to the Linking menu, point to Edit, and click Options. In Excel 2003, on the Thomson Reuters menu, point to Linking, and click Options.
2. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow next to Edit, and click Options. In Excel 2007 or 2010, go to the Linking group on the Thomson Reuters tab, click the arrow next to Edit, and click Options.
3. Next to Highlight Color, click the arrow next to the colored box, click and/or slide for a new color, or type the Red, Green, and Blue values.
4. Click Apply.
5. Click Done.

Edit Individual Links (Linking)

View the Properties of an Individual Link (Linking)
1. Open the PowerPoint presentation, Word document, or source Workbook with the link with properties that you want to view.
2. Click the link.
3. In PowerPoint or Word 2003, go to the Linking menu, point to Edit, and click Link Properties.
4. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow next to Edit, and click Link Properties.
5. Make changes to the link, click View Source to view the source of the link, or click OK.

Cut, Copy, or Paste a Link in a Word document (Linking)
You can cut, copy, and paste links in Word documents but not in PowerPoint presentations.

To cut, copy, or paste a link in a Word document
1. Open the Word document or source Workbook with the link with properties that you want to view.
2. Click the link.
3. In Word 2003, go to the Linking menu, point to Edit, and click Cut Link or Copy Link.
4. In Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow next to Edit, and click Cut Link or Copy Link.
5. Click on a slide or in the document where you want to paste the link.
6. In Word 2003, go to the Linking menu, point to Edit, and click Paste Link.
7. In Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, click the arrow next to Edit, and click Paste Link.
8. Save the presentation or document.

Keyboard Shortcuts (Linking)
Linking has keyboard shortcuts in Excel. You can edit or deactivate any of the shortcuts. You can also import keyboard shortcuts to overwrite the system defaults or export the keyboard shortcuts from Linking to another place.
These keyboard shortcuts are unique to Linking and are not related to the Thomson Reuters Spreadsheet Link keyboard shortcuts (see "Keyboard Shortcuts" on page 214).

**List of Default Keyboard Shortcuts (Linking)**

These default shortcuts apply to Excel when you are using Linking. You can change these default shortcuts to different keystrokes. For a list of default shortcuts for Thomson Reuters Spreadsheet Link, see Keyboard Shortcuts (on page 214).

<table>
<thead>
<tr>
<th>Operation</th>
<th>Shortcut</th>
</tr>
</thead>
<tbody>
<tr>
<td>apply or change cell background</td>
<td>Ctrl + Shift + b</td>
</tr>
<tr>
<td>apply or change cell border color</td>
<td>Ctrl + Alt + 3</td>
</tr>
<tr>
<td>apply or change cell border thickness</td>
<td>Ctrl + Shift + t</td>
</tr>
<tr>
<td>apply or change Currency</td>
<td>Ctrl + Shift + y</td>
</tr>
<tr>
<td>apply or change date</td>
<td>Ctrl + Shift + d</td>
</tr>
<tr>
<td>decrease number of digits after decimal by one</td>
<td>Ctrl + Alt + - (hyphen)</td>
</tr>
<tr>
<td>decrease font size by one point</td>
<td>Ctrl + Alt + , (comma)</td>
</tr>
<tr>
<td>decrease indent by one point</td>
<td>Ctrl + Alt + ] (close square bracket)</td>
</tr>
<tr>
<td>change font color</td>
<td>Ctrl + Alt + 7</td>
</tr>
<tr>
<td>change horizontal cell alignment</td>
<td>Ctrl + Shift + left arrow</td>
</tr>
<tr>
<td>increase number of digits after decimal by one</td>
<td>Ctrl + Alt + + (plus sign)</td>
</tr>
<tr>
<td>increase font size by one point</td>
<td>Ctrl + Alt + . (period)</td>
</tr>
<tr>
<td>increase indent by one point</td>
<td>Ctrl + Alt + [ (open square bracket)</td>
</tr>
<tr>
<td>apply or change number formats</td>
<td>Ctrl + Shift + n</td>
</tr>
<tr>
<td>apply or change table border color</td>
<td>Ctrl + Alt + 4</td>
</tr>
<tr>
<td>apply or change table border thickness</td>
<td>Ctrl + Shift + h</td>
</tr>
<tr>
<td>change vertical cell alignment</td>
<td>Ctrl + Shift + right arrow</td>
</tr>
</tbody>
</table>
Edit Default Keyboard Shortcuts (Linking)
You can edit not only the keystrokes that you use for the Linking keyboard shortcuts in Excel, but you can also edit the values for some of the shortcuts. For example, you can change the default background colors of a cell and the order in which Excel applies them with each press of the keyboard shortcut.

Edit the Keystrokes of Default Keyboard Shortcuts (Linking)
1. In Excel 2003, go to the Thomson Reuters menu, point to Linking, and click Shortcuts. In Excel 2007 or 2010, in the Linking group on the Thomson Reuters tab, click Shortcuts.
2. In PowerPoint or Word 2003, on the Linking menu, click Shortcuts. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click Shortcuts. Clear or select the Ctrl, Alt, and Shift boxes, and/or select a key from the drop-down.
3. Click Save.

Edit Default Keyboard Shortcuts with Colors (Linking)
You can have up to five color selections for cell background, cell border, font color, and table border color. Every time you press the keyboard shortcut, the value changes according to your selected default order.

To edit the values and order for shortcuts with color changes
1. In Excel 2003, go to the Thomson Reuters menu, point to Linking, and click Shortcuts. In Excel 2007 or 2010, in the Linking group on the Thomson Reuters tab, click Shortcuts.
2. In PowerPoint or Word 2003, on the Linking menu, click Shortcuts. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click Shortcuts. Click Edit next to the color-related shortcut that you want to change.
3. To remove one of the five set colors, click a color in the Order box, and click Remove. Repeat if necessary.
4. To add one of the set colors, click it in the Options box, and click Add. Repeat if necessary.
5. To add a custom color, click , follow the instructions, click Apply, and click Done.
6. To rearrange the color selections to appear in a different order every time you press the keyboard shortcut, click a color in the Order box, and click Move Up or Move Down. Repeat with other colors if necessary.
7. To edit the keystrokes, see Edit the Keystrokes of Default Keyboard Shortcuts (Linking)” on page 175.
8. Click Save.

Edit Default Keyboard Shortcuts with Thickness of Lines (Linking)
You can change the cell border thickness or the table border thickness. You can select up to five thickness values. Every time you press the keyboard shortcut, the value changes according to your selected default order.

To edit the values and order for thickness in cell and/or table borders
1. In Excel 2003, go to the Thomson Reuters menu, point to Linking, and click Shortcuts. In Excel 2007 or 2010, in the Linking group on the Thomson Reuters tab, click Shortcuts.
2. In PowerPoint or Word 2003, on the Linking menu, click Shortcuts. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click Shortcuts. Click Edit next to the thickness-related shortcut that you want to change.
3. To remove a thickness selection, click it in the Order box, and click Remove. Repeat if necessary.
4. To move a thickness selection back, click it in the Options box, and click Add.
5. To rearrange the thickness selections to appear in a different order every time you press the keyboard shortcut, click a thickness in the Order box, and click Move Up or Move Down. Repeat with other thickness selections if necessary.

6. To edit the keystrokes, see Edit the Keystrokes of Default Keyboard Shortcuts (see "Edit the Keystrokes of Default Keyboard Shortcuts (Linking)" on page 175).

7. Click Save.

**Edit Default Keyboard Shortcut Values for Currency (Linking)**

You can have up to five values for currency. Every time you press the keyboard shortcut, the value changes according to your selected default order.

If you want to add your own currency format, you can type it in your preferred format, such as $#,##0.00, or in a native Excel currency or custom format.

To change the default values and order of the keyboard shortcut for currency

1. In Excel 2003, go to the Thomson Reuters menu, point to Linking, and click Shortcuts. In Excel 2007 or 2010, in the Linking group on the Thomson Reuters tab, click Shortcuts.


3. To remove a currency, click it in the Order box, and click Remove. Repeat if necessary.

4. To add a currency, click it in the Options box, and click Add. Repeat if necessary.

5. To add another option, type it in the text box, click Add, click it in the Options box, and click .

6. To rearrange the currency selections to appear in a different order every time you press the keyboard shortcut, click a currency in the Order box, and click Move Up or Move Down. Repeat with other currency selections if necessary.

7. To edit the keystrokes, see Edit the Keystrokes of Default Keyboard Shortcuts (see "Edit the Keystrokes of Default Keyboard Shortcuts (Linking)" on page 175).

8. Click Save.

**Edit Default Keyboard Shortcut Values for Date (Linking)**

You can have up to five values for date. Every time you press the keyboard shortcut, the value changes according to your selected default order.

If you want to add your own date format, you can type it in your preferred format, such as mm-dd-yyyy, or in a native Excel date format.

To change the default values and order of the keyboard shortcut for date

1. In Excel 2003, go to the Thomson Reuters menu, point to Linking, and click Shortcuts. In Excel 2007 or 2010, in the Linking group on the Thomson Reuters tab, click Shortcuts.

2. In PowerPoint or Word 2003, on the Linking menu, click Shortcuts. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click Shortcuts. Click Edit next to Date.

3. To remove a date, click it in the Order box, and click Remove. Repeat if necessary.

4. To add a date, click it in the Options box, and click Add. Repeat if necessary.

5. To add another date option, type it in the text box, click Add, click it in the Options box, and click .

6. To rearrange the date selections to appear in a different order every time you press the keyboard shortcut, click a date in the Order box, and click Move Up or Move Down. Repeat with other date selections if necessary.
7. To edit the keystrokes, see Edit the Keystrokes of Default Keyboard Shortcuts (see "Edit the Keystrokes of Default Keyboard Shortcuts (Linking)" on page 175).

8. Click **Save**.

**Edit Default Keyboard Shortcut Values for Numbers (Linking)**

You can have up to five values for numbers. Every time you press the keyboard shortcut, the value changes according to your selected default order.

**To change the default values and order of the keyboard shortcut for number**

1. In Excel 2003, go to the Thomson Reuters menu, point to **Linking**, and click **Shortcuts**. In Excel 2007 or 2010, in the **Linking** group on the Thomson Reuters tab, click **Shortcuts**.

2. In PowerPoint or Word 2003, on the **Linking** menu, click **Shortcuts**. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click **Shortcuts**. Click **Edit** next to **Number**.

3. To remove a number, click it in the **Order** box, and click **Remove**. Repeat if necessary.

4. To add a number back, click it in the **Options** box, and click **Add**. Repeat if necessary.

5. To add another number option, type it in the text box, click **Add**, click it in the **Options** box, and click **Move Up** or **Move Down**. Repeat with other number selections if necessary.

6. To rearrange the number selections to appear in a different order every time you press the keyboard shortcut, click a number in the **Order** box, and click **Move Up** or **Move Down**. Repeat with other number selections if necessary.

7. To edit the keystrokes, see Edit the Keystrokes of Default Keyboard Shortcuts (see "Edit the Keystrokes of Default Keyboard Shortcuts (Linking)" on page 175).

8. Click **Save**.

**Deactivate Linking Keyboard Shortcuts (Linking)**

1. In Excel 2003, go to the Thomson Reuters menu, point to **Linking**, and click **Shortcuts**. In Excel 2007 or 2010, on the Thomson Reuters tab in the **Linking** group, click **Shortcuts**.

2. In PowerPoint or Word 2003, on the **Linking** menu, click **Shortcuts**. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click **Shortcuts**.

3. In the Thomson Reuters Shortcuts dialog, clear the check box to the right of the keyboard shortcut(s) that you want to deactivate.

4. To hide the disabled items, click **Hide Disabled Items**.

5. When finished, close the Thomson Reuters Shortcuts dialog.

**Import or Export Linking Keyboard Shortcuts (Linking)**

You can import a list of keyboard shortcuts in XML or export the list of keyboard shortcuts that you have selected. The export file is in XML, and you can save it anywhere on your network or hard drive.

**To export the list of keyboard shortcuts**

1. In Excel 2003, go to the Thomson Reuters menu, point to **Linking**, and click **Shortcuts**. In Excel 2007 or 2010, in the **Linking** group on the Thomson Reuters tab, click **Shortcuts**.

2. In PowerPoint or Word 2003, on the **Linking** menu, click **Shortcuts**. In PowerPoint or Word 2007 or 2010, go to the Thomson Reuters Linking group on the Insert tab, and click **Shortcuts**. To edit keyboard shortcuts or their values, see **Edit Default Keyboard Shortcuts** (see "Edit Default Keyboard Shortcuts (Linking)" on page 175).

3. Click **Export**.

4. Select a location where you would like to save it, type a new name for the Shortcuts file (optional), and click **Save**.
To import keyboard shortcuts that you have saved in XML

1. In Excel 2003, go to the Thomson Reuters menu, point to Linking, and click Shortcuts. In Excel 2007 or 2010, in the Linking group on the Thomson Reuters tab, click Shortcuts.
3. Select a location and file name, and click Open.
4. To overwrite the default keyboard shortcuts with the ones that you imported, click Reset All, and click Yes to confirm.

Save a Source Workbooks and Target Presentation or Document to a Zip File (Linking)

You can bundle all of the source files that you have linked to a presentation. Linking copies all the associated files and places them into a zip file along with the presentation or document so that the links can be maintained. You can use this capability only if you have links in your presentation or document.

When you click Share to bundle the source files and presentation or document, the Share Document dialog offers a file destination. You can change the destination for this bundled file at that time, or you can set the default destination in Options.

To bundle and zip source files with your presentation or document

1. Open the presentation or document.
2. In PowerPoint or Word 2003, go to the Linking menu, and click Share.
3. In PowerPoint or Word 2007, go to the Thomson Reuters Linking group on the Insert tab, and click Share.
4. View the Linked Workbooks, and the destination for the bundled file. To change the destination of the bundled file, click Browse, navigate to and select a folder, and click Save.
5. Click OK.
6. If Linking detects broken links, you can click Fix Links or Ignore Broken Links.
7. If you click Fix Links, the Manage Links (see "Manage Links (Linking)" on page 169) dialog opens. When the system is finished fixing links, click Close, and repeat steps 2-5.

To set the default destination for bundled files

1. Open the presentation or document.
2. In PowerPoint or Word 2003, go to the Linking menu, point to Edit, and click Options.
3. In PowerPoint or Word 2007, go to the Thomson Reuters Linking group on the Insert tab, click the arrow next to Edit, and click Options.
4. Under Bundle Location, click Browse, select a folder, and click OK.
Chapter 16  My Workbench

My Workbench is a file management system where you can view, copy, move, and delete files.

About My Workbench

My Workbench is offered for three different features within three different tabs in Thomson Reuters Spreadsheet Link: Templates, Lists and Screens.

- To open My Workbench click the icon.
- To navigate backwards or forwards through pages you have previously viewed, click .
- To add columns, right-click the column heading and select Add Columns. Check the box next to the column you would like to add. To move column headings up or down, click the heading topic and click either Move Up or Move Down. Click OK. Adding and removing columns updates the column settings only while the My Workbench dialog box is open.
- To remove columns, right-click the column heading and select Remove Column. Adding and removing columns updates the column settings only while the My Workbench dialog box is open.
- To sort files ascending or descending by column heading, click a column heading.

Manage Lists (My Workbench)

Lists are Portfolio Warehouse lists that you can view or export. To export lists, see Export to Excel (see "Export to Excel (My Workbench)" on page 184).

To create new watchlists, click New and then List. The List Builder (see "Watchlist Builder" on page 118) launches. To create a new portfolio, see Funded Portfolio Builder (on page 115).
Create Subfolders for Watchlists and Portfolios (My Workbench)

To create new personal or shared sub-folders for watchlists and portfolios
1. Click New and select Folder.
2. Click the triangle next to either Personal Lists or Shared Lists, and click Watchlists or Portfolios.
3. Type a unique name in the Name box.
4. Click OK.

Search for and View Watchlists and Portfolios (My Workbench)

To search for and view lists
1. Click the Lists tab.
2. To browse through the lists, in the Lists area, click the Personal Lists or Shared Lists folder and the Watchlists or Portfolios folder or sub-folders, and click a watchlist or portfolio.
3. To search for a list, type all or part of a list name in the box, click , and click Search Ranks, Search All, or Search Selected Folder.
4. To view the identifiers, shares, and weight of a portfolio as of a date other than today, type over the date in the As Of box in the right panel, or click , and select a date.

Delete Subfolders for Watchlists and Portfolios (My Workbench)

To delete lists
1. In the Folders area, browse through the folders, click one, and select a list.
2. Click Delete.
   The list goes into the Recycle Bin for 14 days before being permanently deleted. For more details, see Use the Recycle Bin (see "Use the Recycle Bin (My Workbench)" on page 184).

Manage Screens (My Workbench)

Screens are a set of entities based on your specified criteria. To export screens, see Export to Excel (see "Export to Excel (My Workbench)" on page 184).

To create new screens, click New and select Screen. The Screen Builder (on page 134) launches.

Create Screen Sub-folders (My Workbench)

To create new personal or shared screen sub-folders
1. Click New and select Folder.
2. Select either Personal or Shared Screens.
3. Type a unique name in the Name box.
4. Click OK.

Search for and View Screens (My Workbench)

To search for and view screens
1. Click the Screens tab in My Workbench.
2. In the Folders area, browse through the folders, click one, and select a screen.
3. To search for a screen, type all or part of a screen name in the box.
   a. Click .
b. To search for a screen in a specific folder, click the icon drop-down, and click Select Folder. Browse through the folders, and click OK.

Delete Screens (My Workbench)

To delete screens
1. In the Folders area, browse through the folders, click one, and select a screen.
2. Click Delete. The screen goes into the Recycle Bin for 14 days before being permanently deleted. For more details, see Use the Recycle Bin (see "Use the Recycle Bin (My Workbench)" on page 184).

Manage Expressions (My Workbench)

Expression Builder is a tool that lets you combine Thomson Reuters data items with analytical functions to create custom expressions.

For example, you can create a statistical function by applying an analytical function to a time series data array or create a custom data item by combining multiple data items. To export expressions, see Export to Excel (see "Export to Excel (My Workbench)" on page 184).

To create new expressions, click New and select Expression. The Expression Builder (on page 53) launches.

Create Expression Sub-folders (My Workbench)

To create new personal or shared expression sub-folders
1. Click New and select Folder.
2. Select either Personal or Shared Expressions.
3. Type a unique name in the Name box.
4. Click OK.

Search for and View Expressions (My Workbench)

To search for and view expressions
1. Click the Expressions tab in My Workbench.
2. In the Folders area, browse through the folders, click one, and select an expression.
3. To search for an expression, type all or part of an expression name in the box.
   a. Click .
   b. To search for an expression in a specific folder, click the icon drop-down, and click Select Folder. Browse through the folders, and click OK.

Delete Expressions (My Workbench)

To delete expressions
1. In the Folders area, browse through the folders, click one, and select an expression.
2. Click Delete. The expression goes into the Recycle Bin for 14 days before being permanently deleted. For more details, see Use the Recycle Bin (see "Use the Recycle Bin (My Workbench)" on page 184).

Manage Custom Aggregates (My Workbench)

You can create an aggregate based on any specified group of identifiers and calculate data items or expressions for that aggregate. This allows you to track groups of securities over time and compare individual securities to peer groups of your choice. You can save custom aggregates for later use. To export a custom aggregate, see Export to Excel (see "Export to Excel (My Workbench)" on page 184).
To create new aggregates, click **New** and select **Aggregate**. The Aggregate Builder (on page 41) launches.

**Create Aggregate Sub-folders (My Workbench)**

**To create new personal or shared aggregate sub-folders**
1. Click **New** and select **Folder**.
2. Select either **Personal** or **Shared Aggregates**.
3. Type a unique name in the **Name** box.
4. Click **OK**.

**Search for and View Aggregates (My Workbench)**

**To search for and view expressions**
1. Click the **Aggregates** tab in My Workbench.
2. In the **Folders** area, browse through the folders, click one, and select an aggregate.
3. To search for an aggregate, type all or part of an expression name in the box.
   a. Click ![search](image)
   b. To search for an expression in a specific folder, click the icon drop-down, and click **Select Folder**. Browse through the folders, and click **OK**.

**Delete Custom Aggregates (My Workbench)**

**To delete aggregates**
1. In the **Folders** area, browse through the folders, click one, and select an aggregate.
2. Click **Delete**. The aggregate goes into the Recycle Bin for 14 days before being permanently deleted. For more details, see Use the Recycle Bin (see "Use the Recycle Bin (My Workbench)" on page 184).

**Manage Templates (My Workbench)**

Templates are customized spreadsheets that include data and formats that make sense to you and your business. You can create your own customized templates and upload them to My Workbench where you can add descriptions and permissions accordingly. You can then save these templates on Thomson Reuters servers for easy access for you and your colleagues.

**Create Template Sub-Folders (My Workbench)**

**To create new personal or shared template sub-folders**
1. Click **New**.
2. Select either **Personal** or **Shared Templates**.
3. Type a unique name in the **Name** box.
4. Click **OK**.

**Search for and View Templates (My Workbench)**

**To search for and view templates**
1. Click the **Templates** tab.
2. Browse through the template folders in the **Templates** section, open a folder and select a template.
3. To search for a template, type all or part of a template name in the box.
   a. Click ![search](image).
b. To search for a template in a specific folder, click the icon drop-down and click **Select Folder**. Browse through the folders and click **OK**.

**Upload Templates (My Workbench)**

**To upload templates**
1. Click **Upload**.
2. Type a location in the box, or click the **File** icon to browse for a template.
3. Type a unique name and description in the appropriate boxes.
   - Template names must be different from List and Screen names.
4. Click **Upload**.

**Delete Templates (My Workbench)**

**To delete templates**
1. Browse through the template folders in the **Templates** section, open a folder and select a template.
2. Click **Delete**. The template goes into the Recycle Bin for 14 days before being permanently deleted. For more information, see Use the Recycle Bin (see "Use the Recycle Bin (My Workbench)" on page 184).

**Manage Rankings (My Workbench)**

Rankings are a ranked set of entities based on your specified criteria. To export rankings, see Export to Excel (see "Export to Excel (My Workbench)" on page 184).

To create new rankings, click **New** and select **Rank**. The Multi-Factor Ranking Builder (see "Multi-Factor Ranking" on page 147) launches.

**Create Ranking Sub-folders (My Workbench)**

**To create new personal or shared ranking sub-folders**
1. Click **New** and select **Folder**.
2. Select either **Personal** or **Shared Ranks**.
3. Type a unique name in the **Name** box.
4. Click **OK**.

**Search for and View Rankings (My Workbench)**

**To search for and view rankings**
1. Click the **Ranks** tab in My Workbench.
2. To browse through the rankings, in the **Folders** area, browse through the folders, click one, and select a ranking.
3. To search for a ranking, type all or part of a ranking name in the box.
   a. Click **Search Ranks, Search All, or Search Selected Folder**.

**Delete Rankings (My Workbench)**

**To delete rankings**
1. In the **Folders** area, browse through the folders, click one, and select a ranking.
2. Click **Delete**. The ranking goes into the Recycle Bin for 14 days before being permanently deleted. For more details, see Use the Recycle Bin (see "Use the Recycle Bin (My Workbench)" on page 184).
Use the Recycle Bin (My Workbench)

You can delete any file in the Shared or Personal folders that you have read/write permissions to. Files in the Recycle Bin are automatically deleted after 14 days.

To use the recycle bin
1. Click Recycle Bin on the bottom left side of the My Workbench window.
2. To restore a file, click the file and click Restore.
3. To permanently delete a file, click the file and click Delete.
4. To permanently delete all files in the Recycle Bin, click Empty Recycle Bin.

Export to Excel (My Workbench)

You can export Templates, Lists, Expressions, Screens, Aggregates, and Multi-Factor Rankings to Excel.

To export files
1. Select the file you'd like to export.
2. Click Export.
3. To customize your export, see:
   • Customize Your Export (see "Customize Your Export (Constituent Lookup)" on page 6) for lists of index, watch list, or portfolio constituents.
   • Customize Your Export (see "Customize Your Export (Expression Builder)" on page 63) for custom expressions.
   • Customize Your Export (see "Customize Your Export (Screen Builder)" on page 146) for screens.
   • Customize Your Export (see "Customize Your Export (Aggregate Builder)" on page 44) for custom aggregates.
   • Customize your Export (see "Customize your Export (Multi-Factor Ranking)" on page 154) for multi-factor rankings.
Chapter 17  Options

Options are user preferences that guide the system in determining what data to retrieve. For example, you can set your system to reflect the calendar used by a specific exchange so that all pricing data requested is returned with dates that correspond to dates when that exchange was operational.

Options allow you to change many default Thomson Reuters Spreadsheet Link settings on a global level.

Change Connection Settings (Options)

To change connection settings
1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. In the Connection category in the Credentials for Authentication area, type a user name and password.
3. To change the server settings, type a server address and port in the Server Connection Details area. Do not change the Server or Port settings unless instructed to do so by technical support. Thomson Reuters Spreadsheet Link auto-populates this data when you install Thomson Reuters Spreadsheet Link.
4. Click OK to save your new setting and close the Options dialog.

Change Null Tolerance Defaults (Options)

Null Tolerance allows you to specify the maximum percentage of nulls that you want to allow in statistical calculations. If the preferred tolerance level is surpassed, the results will be null.

For example, if you set a null tolerance of 10%, and then take the average of 100 values of which 11 are null, your result will be null.

The Null Tolerance global default is 0%. You can, however, change this setting to another setting from 0% to 100%.

You can set Null Tolerance only at the global level.

To change the null tolerance default on a global level
1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. Select Defaults. Your current setting appears in the Null Tolerance box.
3. In the Null Tolerance box, type a value from 0 to 100.

Change Reporting State Defaults (Options)

The originally reported value is the value at the time the company first reported it.

The latest restated account is the value that a company later adjusted for reasons such as changes in accounting or other standards, etc.

To change global-level defaults for reporting state
1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. Click Defaults.
3. From the Reporting State drop-down, select Originally Reported or Latest Restated Accounts.
4. Click OK.
Change Calendar Methodology Defaults (Options)

The calendar methodology is a method of putting companies with different fiscal year ends on a similar basis.

- **InterimSum** sums the last four quarters or two semiannuals.
- **WeightedAnnual** methodology takes the annual periods and provides monthly weights to each annual period. For example, if you were looking for CY2008 data using weighted annual methodology for a company that has a December fiscal year end, its CY2008 value is the same as its FY2008 value. If you were looking for CY2008 data using weighted annual methodology for a company that has a June fiscal year end, the calendarized value would comprise half of FY2008 and half of FY2009.
- **WeightedAnnualBlend** methodology exists for only IBES data (but not IBES Detail). This uses the exact same logic as the weighted annual, but it mixes both actuals and estimates. If you were seeking CY2010 data, Thomson Reuters Spreadsheet Link would be unable to calculate it currently because 2010 has not yet ended. Thomson Reuters Spreadsheet Link could, however, take the FY0 Actual Value and the FY1 Mean to create a reasonable proxy for the CY2010 value.
- **Cumulative Interim Sum** methodology is for a calendar period or Last Twelve Months (LTM). It calculates a calendar period or LTM by adding the latest annual fiscal period to the sum of the interim periods to date for the next annual period, less the sum of the interim periods to date for the prior year. In other words, Fiscal Interim (stub) + Latest Fiscal Annual - Last Year’s Fiscal Interim (stub)
- **Interim Sum Blend** methodology is for interim data. For Last Twelve Months (LTM) and Calendar Year (CY), Interim Sum Blend method combines both actual and estimated data for future annual periods when available. For NTM, Thomson Reuters Spreadsheet Link sums the next 12 months of interim estimates. For example, Dell Inc, 2009 fiscal year ends on January 31, 2010, after the period end date. Until the last Interim period data is available, you can calculate the LTM data value for Quarter reporters as Actual Sales (Fi0) + Actual Sales (Fi-1) + Actual Sales (Fi-2) + Estimated Sale (Fi1). You can calculate LTM data value for Semi-Annual Trimester reporters as Actual Sales (Fi0) + Actual Sales (Fi-1) + Estimated Sales (Fi1). You can calculate the LTM data value for Semi-Annual reporters as Actual Sales (Fi0) + Estimated Sales (Fi1).

**To change global-level defaults for calendar methodology**

1. From the Thomson Reuters Spreadsheet Link toolbar, click the **Options** icon.
2. Click **Defaults**.
3. From the **Calendar Methodology** drop-down, make a selection.
4. Click **OK**.

Change Lookback Defaults (Options)

Look-Back allows you to define how far back you want Thomson Reuters Spreadsheet Link to look before returning a null value. You can use it to fill in gaps of missing data with reliable information, especially for smaller companies that do not trade on a daily basis.

For example, if you specify daily price data as of 11/30/2008 and the security did not trade that day, Thomson Reuters Spreadsheet Link returns data as of 11/29/2008 (the previous day traded) rather than reporting a null value.

If frequency is set to 1 (or more), the system limits its search to one (or more) periods prior to the one you are requesting. If the data value is still null, then the system returns a null value.

**To change global-level Lookback default values**

1. From the Thomson Reuters Spreadsheet Link toolbar, click the **Options** icon.
2. Choose the **Defaults** category.
3. In the Lookback area, use the arrows to change the settings.
4. Click **OK** to save your new setting and close the **Options** dialog.
Information Logs (Options)

You can decide how much detail to provide in information logs: standard information or all information. Additionally, you can open the folder of logs or mail them from the Options dialog.

Change Logging Detail Defaults (Options)

To change global-level defaults for logging details

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. Click Defaults.
3. Select the information you would like in logs regarding Thomson Reuters Spreadsheet Link performance.
4. Click OK.

Open Log Folder or Send Logs (Options)

To send a message with Thomson Reuters Spreadsheet Link information logs

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. On the bottom left, click the arrow next to Mail Logs, and click Mail Information Log.
3. In the e-mail that opens with the attached log, type an e-mail address in the To line and, optionally, additional text in the body.
4. Click Send.

To open the logs folder and view all the logs

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. On the bottom left, click the arrow next to Mail Logs, and click Open Logs Folder.

Change Identifier Matching Settings (Options)

Your identifier matching setting specifies the order in which Thomson Reuters Spreadsheet Link matches identifiers when you type them directly into a worksheet.

If Thomson Reuters Spreadsheet Link does not find a match for the first type of identifier you select, such as a ticker, the system then tries to use the next listed source, such as a CUSIP, to match the identifier. The order that you set the sources reflects the order that the system checks for a match.

You can set Identifier Matching at the global level only.

To change the identifier matching setting on a global level

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. Click Identifiers.
3. From the Default ID Type drop-down, select a default identifier type.
   For identifier matching, your current identifiers are listed in preference order in the right list box.
4. To rearrange the order of identifier matching, select an identifier, and use the Move Up and Move Down buttons.
5. To ensure that you can retrieve private company data (entitlements required), scroll down to select Gem Quote Perm ID, click Move Up so that Gem Quote Perm ID is not at the bottom of the list, and click Apply.
6. Click OK to save your new setting and close the Options dialog.

Change Broker Settings (Options)

The Broker Settings preference allows you to limit results for the detail and custom estimate fields of the brokers you choose to include or exclude. If you do not select a preference, results reflect the input of all available brokerages.

For example, if you want to determine detail results from a specific broker, you would exclude all other brokerages. If you want results from all brokerages except for two brokers, you would exclude those two brokers.

To change your broker settings

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. Click Broker.
3. To filter the list of brokers in the Available Brokers area, type a filter (such as "company" or "intl") in the Filter box.
   The list of brokers updates to match your filter as you type. If no filter is entered, all available brokers appear.
4. From the Available Brokers area, select a broker.
   You can select multiple brokers by pressing CTRL and clicking individual brokers.
5. To add selected brokers to the Selected Brokers list box, click Add.
6. To remove selected brokers from the Selected Brokers list box, highlight a broker in the Selected Brokers list box and click Remove.
7. To include or exclude your selected brokers, choose one of the Option buttons.
8. Click OK to save your new setting and close the Options dialog.

View Entitlements (Options)

The content and functionality you can use in Thomson Reuters Spreadsheet Link are based on entitlements. You can view the functionality and content for which you have entitlements in the Options dialog.

To view entitlements

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. **Click Entitlements.**
   Your entitlements appear checked.

### Change Update Settings (Options)

You can modify how often Thomson Reuters Spreadsheet Link refreshes and stores data, and whether to receive notifications of new versions.

Depending on your company's installation package, you may not have the ability to upgrade to a new version.

**To change update settings**

1. From the Thomson Reuters Spreadsheet Link toolbar, click the **Options** icon.
2. Click **Updates**.
3. To set how long Thomson Reuters Spreadsheet Link stores cache on data items, in the **Data Cache Time Frame** area, type a number of hours and minutes into the **hours** and **minutes** spin boxes.
4. To have Thomson Reuters Spreadsheet Link refresh data in real time, select **Enable real time refresh every**, and type a number of seconds into the **seconds** spin box.
5. To disable function call updates (see "Disable Function Calls" on page 206), select the check box.
6. To make the default calculation mode (on page 204) Manual, clear the **Auto Calculation** check box.
7. To clear your data cache, click **Clear Data Cache**.
8. To clear your metadata cache, click **Clear Meta Data Cache**.
9. To set the notification options for Thomson Reuters Spreadsheet Link updates, in the **Version Updates** area, select **Notify if an upgrade is available** or **Do not notify about upgrades**.
10. Click **Apply** to save your new settings.
- or -
Click **OK** to save your new settings and close the **Options** dialog.

### Change Regional Settings (Options)

Thomson Reuters Spreadsheet Link allows you to change your regional settings.

### Change Country Settings (Options)

The Country global default is the United States of America. You can, however, change this setting by specifying a country for any ticker without an exchange qualifier. The same ticker can be available in multiple countries, so if you specify a country preference Thomson Reuters Spreadsheet Link searches your preferred country first. If no data is available, Thomson Reuters Spreadsheet Link searches exchanges from other countries with that ticker.

Additionally, you can specify Thomson Reuters Spreadsheet Link to retrieve data from only one country and not search beyond that one country.

**To change the country setting on a global level**

1. From the Thomson Reuters Spreadsheet Link toolbar, click the **Options** icon.
2. In the **Category** area, select **Regional**.
3. From the **Country** drop-down, make a selection.
4. Click **OK** to save your new setting and close the **Options** dialog.

**Change Input Date Settings (Options)**

The Input Date global format default is m/d/yyyy. You can, however, choose a different date format and change this setting.

For example, if you live in Europe, you may want to change the date format to dd/mm/yyyy because that is one commonly used in that region.

See the Input Date drop-down in Thomson Reuters Spreadsheet Link for a list of acceptable formats.

To change the input date setting on a global level

1. From the Thomson Reuters Spreadsheet Link toolbar, click the **Options** icon.
2. In the **Category** area, select **Regional**.
3. From the **Input Date** drop-down, make your selection.
4. Click **OK** to save your new setting and close the **Options** dialog.

**Change Output Date Settings (Options)**

The Output Date global format default is mm/dd/yyyy. You can, however, choose a different date format and change this setting.

For example, if you live in Europe, you may want to change the date format to dd/mm/yyyy because that is one commonly used in that region.

See the Output Date drop-down in the Options dialog of Thomson Reuters Spreadsheet Link for a list of acceptable formats.

To change the output date setting on a global level

1. From the Thomson Reuters Spreadsheet Link toolbar, click the **Options** icon.
2. In the **Category** area, select **Regional**.
3. From the **Output Date** drop-down, make a selection.
4. Click **OK** to save your new setting and close the **Options** dialog.
Chapter 17 Options

Change Currency Settings (Options)
The Currency default is set to display all monetary values in the national currency of your country. You can, however, change this setting to reflect the currency of your choice.

For example, if you trade in Europe, you can change your currency setting to European Union euro so that all monetary values are displayed in euros.

To change your currency setting on a global level
1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. In the Category area, select Regional.
3. From the Currency drop-down, make a selection.
4. Click OK to save your new setting and close the Options dialog.

Change Statistic Currency Settings (Options)
Statistic Currency refers to the currency used to calculate statistics in monetary terms for multi-company statistics. When Thomson Reuters Spreadsheet Link computes the average of a group of monetary values in different denominations, it first converts their values into one standard currency. If the preference is for United States dollars (USD), Thomson Reuters Spreadsheet Link converts all values to US dollars and then computes the average.

The Statistic Currency global default is United States dollar. You can, however, change this setting to reflect the currency of your choice.

To change the statistic currency setting on a global level
1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. In the Category area, select Regional.
3. From the Statistic Currency drop-down, make a selection.
4. Click OK to save your new setting and close the Options dialog.

Change Language Settings (Options)
The Language global default is English and, currently, English is the only option available.

Change Exchange Calendar Settings (Options)
The Exchange Calendar global default is a five-day calendar. You can, however, change this setting to reflect the calendar of a specific exchange or choose to always display a seven-day calendar. This only applies when the frequency is “daily” (D) for trading days in a time series data request.

For example, if you trade on the London exchange and want the pricing data requested to be returned with dates that correspond to United Kingdom exchanges, you can change your calendar preference to United Kingdom exchanges.

To change the exchange calendar setting on a global level
1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. In the Category area, select Regional.
3. From the Exchange Calendar drop-down, make a selection.
4. Click OK to save your new setting and close the Options dialog.

Change Fiscal Calendar Settings (Options)

Fiscal Calendar Options

Fiscal Calendar allows you to specify which vendor to use to resolve fiscal periods for all data items for your identifiers. A hierarchy of vendors defines the Fiscal Calendar: I/B/E/S, then Worldscope, then Reuters Fundamentals, and then Toyo Keizai.

You have two options in choosing a fiscal calendar:

- **Vendor Specific**: If you set your calendar to Vendor Specific, Thomson Reuters Spreadsheet Link uses the fiscal calendar that is associated with the vendor that is sourcing your data item selection.

  Under this option, the data for I/B/E/S, Worldscope, Reuters Fundamentals, and Toyo Keizai use calendars with their respective names. For example, I/B/E/S data uses the I/B/E/S calendar, Worldscope data uses the Worldscope calendar, and so on. Therefore, the same vendor supplies the fiscal calendar and the data item.

- **Cross-vendor**: If you set your calendar to Cross-vendor, Thomson Reuters Spreadsheet Link uses a single calendar across all vendors according to specific ticker. For example, if ticker ABC has I/B/E/S coverage, Thomson Reuters Spreadsheet Link uses the I/B/E/S calendar. If ticker ABC does not have I/B/E/S coverage, Thomson Reuters Spreadsheet Link uses the Worldscope calendar, and so on down the hierarchy.

Choosing a Fiscal Calendar

Choosing a Fiscal Calendar depends on the task you want to perform.

- **Vendor Specific**: If you are focused on a single content set across tickers and do not need to normalize calendars, choose Vendor Specific.

- **Cross-vendor**: If you need to normalize calendars for multiple vendors and the same ticker, but you do not want to do the work manually, choose Cross-vendor.

In some cases, you may need to redesign your work to achieve your desired results. For example, you may want to normalize everything across vendors based on the last reported period according to Reuters Fundamentals. In this case, the type of Fiscal Calendar does not matter. You should design the spreadsheet to use the last reported period from Reuters Fundamentals and then reference this as an absolute period in the subsequent queries. You should not assume that the calendar rolls based on Reuters Fundamentals using Cross-vendor.
To change the fiscal calendar setting on a global level

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. Click Regional.
3. Under Settings for Calendar, make a selection from the Fiscal Calendar drop-down.
4. Click OK to save your new setting and close the Options dialog.

Change Error Message Display Settings (Options)

You can set defaults on a global level for various display settings:

- You can show or hide parameters (see "Parameter Definitions - Alphabetical List" on page 15) in function calls as the default view.
- You can set a default color for numbers you edit in Click Thru Audit.
- You can set whether a new Click Thru Audit source document will replace the one in the open window or will open as a new window.
- You can set default display text for Null items and other error messages.

Change Error Message Display Settings (Options)

To change error message display settings on a global level

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. Select Display.
3. Change the null value error message.
   a. In the Error Messages area, select the option button next to the Null value box.
   b. In the text box, type an error message.
4. Change the offline mode error message.
   a. In the Error Messages area, select the option button next to the Offline mode box.
   b. In the text box, type an error message.
5. Change the retrieving data error message.
a. In the **Error Messages** area, select the option button next to the **Retrieving data** box.

b. In the text box, type an error message.

6. Click **Apply** to save your new settings.

   - or -

   Click **OK** to save your new setting and close the **Options** dialog.

---

### Change Display Settings for Click Thru Audit (Options)

**To change default display settings for Click Thru Audit**

1. From the Thomson Reuters Spreadsheet Link toolbar, click the **Options** icon.

2. Select **Display**.

3. To set the default color of the numbers you edit in Click Thru Audit, click **A** and click a color. To select a custom color, click **More Colors**, and use the sliders to select a color and opacity. Click **OK**.

4. Set Thomson Reuters Spreadsheet Link, when you are viewing a Click Thru document and want to open another, always to open a new Click Thru window, always to replace the Click Thru document in the window you have open with the new document, or always to ask which to do.

   a. To set Thomson Reuters Spreadsheet Link always to open a new Click Thru document as a new window, select **New Click Thru documents to be opened in** as **New Window**.

   b. To set Thomson Reuters Spreadsheet Link always to open a new Click Thru document by replacing the document that you are viewing in the current window, select **New Click Thru documents to be opened in** as **Current Window**.

   c. To set Thomson Reuters Spreadsheet Link to ask you each time you are viewing a Click Thru document and want to open a new document, select **Always ask me where to open documents from a different Click Thru source**.
5. Click **OK**.

**Change Display Settings for Click Thru Audit (Options)**

You can show or hide the names of parameters you add to a data item in both the function bar at the bottom of Data Item Lookup and the function call itself.

When you show the names of parameters, the function call looks like this: `TF.PR.PriceClose(sdate=0D)`

When you hide the names of parameters, the function call looks like this: `TF.PR.PriceClose(0D)`

To change default display settings for parameters in function calls

1. From the Thomson Reuters Spreadsheet Link toolbar, click the **Options** icon.
2. Select **Display**.
3. Select or clear the **Display Data Item Parameter Names** check box.
4. Click **OK**.
Export Options to Excel (Options)

You can export all of your option settings to Excel in code format. For example, if your Data Output option setting is English (US), Thomson Reuters Spreadsheet Link exports the code dataResultsLanguage=en.

To export your options to Excel

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. Click Export.
3. Click a cell on the spreadsheet.
4. From the left box of the Options dialog Preference Details area, select an option you would like to export as code. To select multiple options, hold the CTRL key while clicking options.
5. Click >>>.
6. Click Export.

![Options dialog](image)

View Version and Support Information (Options)

To view version information and customer support numbers

1. From the Thomson Reuters Spreadsheet Link toolbar, click the Options icon.
2. Click Resources.
- Version information appears in the **About the Product** area.
- Customer support numbers appear in the **Support Numbers** area.
Chapter 18  Click Thru

Thomson Reuters Spreadsheet Link Click Thru provides greater access to the type of content you rely on to make key investment decisions and recommendations. Click Thru delivers greater transparency by allowing you to examine the underlying calculations and view specific data in original, company-created source documents.

Thomson Reuters Spreadsheet Link offers more than 55,000 US and non-US Click Thru-enabled reports via Worldscope, including:

- 10-K Reports
- ARS Reports
- 10-Q Reports
- Interim Reports
- Prospectuses
- 8-K Reports
- 20-F Filings

Click Thru also provides company specified details on all standardized and as reported, including derived, data items for Reuters Financials.

Enable or Disable Click Thru

To enable or disable Click Thru

- From the Thomson Reuters menu, click Click Thru Audit.

If the icon in the menu, Thomson Reuters Spreadsheet Link toolbar, or ribbon is highlighted in orange, Click Thru Audit is activated.

Access Click Thru

Click Thru-enabled cells include a hyperlink. You can access information only for Worldscope or Reuters Financial data for which you have entitlements. Some items, regardless of your entitlements, do not have Click Thru capability.
To access Click Thru functionality
1. Click the hyperlink in a Click Thru-enabled cell in your spreadsheet.
2. To see the line item in the original document, click the double arrow next to the item.

Edit a Number (Click Thru Audit)

You can edit a number in a filing within the viewer, change the color of the edited number, and put the edited number into any cell in your spreadsheet. You can also create comments to indicate which changes you have made to the numbers.

To edit a number in a Click Thru Audit filing
1. After clicking a hyperlinked value in your spreadsheet, click Edit this number in the Click Thru Viewer.
2. Type a value in the field to the left of Edit this number.
3. To change the color of edited values, click Format Edited Numbers (see "Change Display Settings for Click Thru Audit (Options)" on page 195).
4. To add a comment, type comment text in the Comments box.
5. To replace the value in the current cell, click Update Existing Cell.
6. To place the value in a different cell, click Update in New Cell, type a new cell reference, for example =$B$20, and press Enter.

Print a Source Document (Click Thru Audit)

After you view a source document, you can can print it.

To print a source document
1. After clicking a hyperlinked value in your spreadsheet, click Print.
2. In the Print dialog, click Print.

Save a Source Document as a PDF (Click Thru Audit)

After you view a source document, you can save it as a portable document format (PDF).

To save a source document as a PDF
1. After clicking a hyperlinked value in your spreadsheet, click Save to PDF.
2. From the Save In drop-down, navigate to the storage location for the PDF.
   You do not have to type .pdf after the name.
3. In the File Name field, type a name for the source document.
4. Click Save.
5. To close the PDF, click the X in the upper right corner.

Cell Format and Click Thru

If you disable Click Thru and format cells that contain data with Click Thru functionality in any of the following ways, the formatting remains if you enable Click Thru:
• numbers
• text alignment
• word wrap
• font
• font style
• size
• background color

If you disable Click Thru and format cells that contain data with Click Thru functionality in any of the following ways, the formatting reverts to the pre-formatted style if you enable Click Thru:

• shrink to fit
• merge cells
• text direction
• orientation
• effects
• fill effects
• pattern color
• pattern style
• protection

If you disable Click Thru and change the font color of data with Click Thru functionality, Thomson Reuters Spreadsheet Link reverts the data to the default color of Click Thru text if you enable Click Thru. If you disable Click Thru functionality once again, Thomson Reuters Spreadsheet Link reverts to your customized font color.

If you disable Click Thru and add an underline to cells that contain data with Click Thru functionality, Thomson Reuters Spreadsheet Link reverts the data to the Click Thru underline style if you enable Click Thru. If you disable Click Thru functionality once again, Thomson Reuters Spreadsheet Link reverts to your customized underline style.
Chapter 19  Enable or Disable Real-Time Data

You can enable and disable the streaming of real-time data from Thomson Reuters Spreadsheet Link into your spreadsheet for any real-time (=TFRT) formulas.

To enable or disable real-time data

- On the Thomson Reuters Spreadsheet Link toolbar, click.
Chapter 20 Refresh Cells

You can manually refresh some or all of the data in your Excel workbook.

This section does not pertain to real-time data (see "Enable or Disable Real-Time Data" on page 202), which updates dynamically.

Excel automatically updates cells dependent on a value or formula whenever the value or formula changes. This is a default setting in Excel that you can modify.

Refresh Selected Cells (Refresh)

You can refresh Thomson Reuters Spreadsheet Link data in a single cell or group of cells. The new data overwrites the old data in the selected cell(s).

For example, you can use this option to retrieve updated Last Close Price data in a cell or entire column, as this data changes daily.

To refresh a cell or group of cells
1. In your spreadsheet, highlight the cell(s) that you would like to update.
2. From the Refresh drop-down on the Thomson Reuters Spreadsheet Link toolbar, choose Refresh selected cell(s).
3. Click .

Refresh the Active Worksheet (Refresh)

You can refresh all Thomson Reuters Spreadsheet Link data in the Excel worksheet that you are currently viewing.

For example, you can use this option to update a company's single-page tearsheet each morning to get the most current data.

To recalculate and refresh all of the Thomson Reuters Spreadsheet Link data in the active worksheet
1. From the Data drop-down on the Thomson Reuters Spreadsheet Link toolbar, choose Refresh active worksheet.
2. Click .

Refresh a Workbook

You can refresh all of the Thomson Reuters Spreadsheet Link data in the open Excel workbook.

For example, you can use this option to update your portfolio each morning to retrieve all the latest data. You could have one worksheet with a list of stock prices, one with a chart of the percentage allocation within the portfolio, one with metrics detailing companies' performance over time, or others that include any other information you would like to track.

To recalculate and refresh all of the Thomson Reuters Spreadsheet Link data in the workbook
1. From the Data drop-down on the Thomson Reuters Spreadsheet Link toolbar, choose Refresh Workbook.
2. Click .
Chapter 21 Calculation Mode

You can prevent Thomson Reuters Spreadsheet Link from updating data or adding new values by turning the calculation mode from Automatic to Manual. When you are in Manual calculation mode, no values on your spreadsheet update.

For example, you can use Manual calculation mode if you are making changes to an expression but do not want the values to update in it or if you want to add a data item to your spreadsheet but do not want values to accompany the data item.

If you export a function call to your spreadsheet while you are in Manual calculation mode, the value displays "Manual Calculation."

While you are in Manual calculation mode, you can refresh selected cells, the active worksheet, or the entire workbook. After you refresh, the items that displayed "Manual Calculation" change to the updated values.

Additionally, when you are in Manual calculation mode, the Click Thru (on page 199) and Real-Time (see "Enable or Disable Real-Time Data" on page 202) buttons in the toolbar are disabled. If Click Thru is on when you switch to Manual calculation mode, you can continue to access the Click Thru Viewer when you are in Manual calculation mode.

The default calculation mode is Automatic.

When you save a workbook that is in Manual calculation mode, no values update.

To turn off Automatic calculation mode
1. On the Thomson Reuters menu or tab, click Automatic Calculation to disable it.
2. To refresh a cell or multiple cells while in Manual calculation mode, highlight the cells, go to the Thomson Reuters menu, point to Refresh and click Refresh Selected Cell(s).
3. To refresh the active worksheet while in Manual calculation mode, go to the Thomson Reuters menu, point to Refresh, and click Refresh Active Worksheet.
4. To refresh the entire workbook while in Manual calculation mode, go to the Thomson Reuters menu, point to Refresh, and click Refresh Entire Workbook.
5. To return to Automatic calculation mode, go to the Thomson Reuters menu, and click Automatic Calculation.
6. To change the default to Manual calculation mode, see Change Update Settings (see "Change Update Settings (Options)" on page 189).
Chapter 22  Work Offline or Disable Function Calls

If you disconnect from your network server, you can still work offline in Thomson Reuters Spreadsheet Link with cached data. When you reestablish your connection, Thomson Reuters Spreadsheet Link synchronizes your work with fresh data.

You can also work online but disable function calls so that they do not refresh or recalculate.

Use Thomson Reuters Spreadsheet Link While Offline

You can work with cached data in Thomson Reuters Spreadsheet Link while you are disconnected from your network server.

Additionally, you can save objects such as screens and expressions to your Personal folder in Thomson Reuters Spreadsheet Link while you are disconnected from the network server.

When you reconnect to the network server, Thomson Reuters Spreadsheet Link synchronizes your work with the network server.

Work with Data in Cache Mode

If you are working online in Thomson Reuters Spreadsheet Link and then disconnect from your network server, the Thomson Reuters Spreadsheet Link toolbar or ribbon shows that you are working in cache mode.

When you are in cache mode, Thomson Reuters Spreadsheet Link does not update data, but it does allow you to work with data that is already on your spreadsheet.

For example, if you are connected to the network and add a company's Net Sales or Revenues from two years ago [TF.FN.Sales(period=FY-2)] to your spreadsheet, when you disconnect from the network, you can still see that number on your spreadsheet and work with it. If you change the period to FY-1, however, the data does not update while you are in cache mode.

When you reconnect to the network, the Thomson Reuters Spreadsheet Link toolbar or ribbon shows that you are online once again. The data on your spreadsheet automatically synchronizes with current data.

In the previous example, if you change the period from FY-2 to FY-1 while you are are cache mode, your spreadsheet updates with the FY-1 data when you reconnect to the network.

Save Items While in Cache Mode

Prior to disconnecting from the network, if you have saved an object, such as an expression (see "Save an Expression (Expression Builder)" on page 59), an aggregate (see "Save a Custom Aggregate (Aggregate Builder)" on page 42), a template (see "Upload Templates (Template Library)" on page 3), a watch list, a portfolio, a screen (see "Save a Screen (Screen Builder)" on page 144), etc. to your Personal folder in Thomson Reuters Spreadsheet Link within the last eight hours, you can create and save another object to your Personal folder while in cache mode.

If you have not saved an object to your Personal folder within the last eight hours, you cannot save to your Personal folder while in cache mode.

Additionally, you cannot save an object to a Shared folder while you are in cache mode.

When your reconnect to the network server, Thomson Reuters Spreadsheet Link synchronizes the objects you saved to your Personal folder with the network server.
Disable Function Calls

You can disable non-real-time functions that contain TF.

For example, you can request data that includes TF in the function call, calculate the data (see "Expression Builder" on page 53), and then disable TF function calls.

The data on your spreadsheet remains the same and does not refresh or recalculate, even if the data changes in the markets.

If you continue to use Spreadsheet Link components while you have disabled TF function calls, exporting to your spreadsheet results in a "Function calls disabled" message. You cannot manually refresh data (see "Refresh Cells" on page 203) while you have disabled function calls.

If you re-enable the function calls, you can manually refresh (see "Refresh Cells" on page 203) static data.

To disable TF function calls from refreshing or recalculting

1. On the Thomson Reuters menu, click Spreadsheet Link Options.
2. In the Category area, choose Updates.
3. Select Disable Function Call Updates.
4. Click OK.
5. To refresh the data or calculation (enable updates), follow steps 1-4, and clear Disable Function Call Updates.
Chapter 23  Date Syntax

Thomson Reuters Spreadsheet Link provides a powerful date engine that allows you to retrieve data at a single date or a series of dates. A series of dates is defined by a start date, an end date and a frequency for which the data should be returned. You can specify or define either a specific date or a date relative to another, usually the current date. Thomson Reuters Spreadsheet Link provides many options for defining dates and a multitude of frequencies.

When you request data, Thomson Reuters Spreadsheet Link first calculates the date for the requested data. If the date is a specific date, no conversion is necessary. If the date is not a specific date, the system converts it to a specific date. If the request is for a series of data, the system calculates the remaining dates by offsetting the start date with the frequency for all points within the start and end date range.

In a time series data request, the order of the data retrieved is determined by the order of the start and end dates. If the end date occurred after the start date, the data is retrieved in ascending chronological order. If the end date occurred before the start date, the data is retrieved in descending chronological order.

About Dates (Date Syntax)

You can reference dates as start dates (sdate), end dates (edate), and period. Period is not a parameter for pricing data items. Therefore, for pricing, you need only sdate and edate. For Financials and Estimates, Period is a mandatory parameter. Period parameter options are almost identical to sdate and edate. When choosing Financials or Estimates, click Select Parameter and the same Date and Period Builder dialog appears as if choosing a sdate/edate with the following exceptions:

- For absolute dates, Calendarized and Calendar Month End are not available for the Period parameter.
- For relative dates, Data Offset and Calendarized are not available for the Period parameter.
- The Period parameter is mandatory for Financial/Estimate data items. Pricing data items do not have any mandatory parameters.

Build Dates (Date Syntax)

Throughout Thomson Reuters Spreadsheet Link, wherever a date is required, the system provides four methods for selecting a date: "Enter Parameter," "Select Parameter," "Select Data Item," and "Cell Reference Parameter."

- **Enter Parameter**
  Allows you to type a date manually in any date format available. Thomson Reuters Spreadsheet Link will not check for date syntax and will not return an error message until the data is actually retrieved.
  Thomson Reuters Spreadsheet Link reads your date entry in the format selected in the Options section.

- **Select Parameter**
  Allows you to select a specific date or dates in the Date and Period Builder (on page 212) dialog. Click the button to access.
  **Note:** Once you make your selection and click OK, the correct date syntax appears in the manual entry box. You can then manually edit the date.

- **Select Data Item**
  Allows you to select a date or dates by selecting a data item that automatically retrieves a date, such as TF.PR.PriceCloseDate.
  **Note:** You can change the data item's value to Date from the Output drop down to automatically retrieve a date.

- **Cell Reference Parameter**
  Allows you to select the cell that you want to reference.
### Absolute Dates (Date Syntax)

Thomson Reuters Spreadsheet Link defines absolute dates in terms of days, months and years, as well as fiscal and calendar quarters and years. You can also use these date formats for period parameters.

<table>
<thead>
<tr>
<th>Type</th>
<th>Syntax</th>
<th>Description</th>
<th>Samples</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calendarized</td>
<td>[YYYY][MM][DD]</td>
<td>Year is between 1950 and current year + 5.</td>
<td>TF.PR.PriceClose(20060125)</td>
<td>The date specified.</td>
</tr>
<tr>
<td>Calendar Month End</td>
<td>[MM]/[YYYY]</td>
<td>Year is between 1950 and current year + 5.</td>
<td>TF.PR.PriceClose(1/2006)</td>
<td>The month and year specified.</td>
</tr>
<tr>
<td>Calendar Quarter</td>
<td>[q]QCY[YYYY]</td>
<td>Quarter is 1-4.</td>
<td>TF.PR.PriceClose(1QCY2006)</td>
<td>Price Close at the end of the first calendar quarter of the specified year.</td>
</tr>
<tr>
<td>Calendar Semi-Annual</td>
<td>[s]SCY[YYYY]</td>
<td>Semi-Annual is 1-2.</td>
<td>TF.FN.Sales(ISCY2006)</td>
<td>Semi-annual sales for the specified half of the specified calendar year.</td>
</tr>
<tr>
<td>Calendar Year</td>
<td>CY[YYYY]</td>
<td>Year is between 1950 and current year + 5.</td>
<td>TF.FN.Sales(CY2006)</td>
<td>Sales for the specified calendar year.</td>
</tr>
<tr>
<td>Fiscal Quarter</td>
<td>[q]FQ[YYYY]</td>
<td>Quarter is 1-4.</td>
<td>TF.FN.Sales(IFQ2006)</td>
<td>Quarterly sales for the specified fiscal quarter and year.</td>
</tr>
<tr>
<td>Fiscal Year</td>
<td>FY[YYYY]</td>
<td>Year is between 1950 and current year + 5.</td>
<td>TF.FN.Sales(FY2006)</td>
<td>Annual sales for the specified fiscal year.</td>
</tr>
</tbody>
</table>

### Relative Dates (Date Syntax)

Thomson Reuters Spreadsheet Link defines specific dates in terms of offsets to other dates, most commonly the current date. If the starting date is not defined, the default is the current date. Offsets are defined in terms of + or - and a time period. Time periods are defined in terms of a frequency.

Below are examples of Relative formats:
<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Samples</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Offset</td>
<td>The value can represent any date available to the content set. Combinations can include any integer with any available frequency to reference the desired date, relative to the current date.</td>
<td>TF.PR.PriceClose(sdate=-3W)</td>
<td>Price close from three weeks ago.</td>
</tr>
<tr>
<td>Calendarized</td>
<td>Year is between 1950 and current year + 5.</td>
<td>TF.PR.PriceClose(sdate=-1/-2/-3)</td>
<td>Price close from three years, two months, and one day ago.</td>
</tr>
<tr>
<td>Calendar Quarter</td>
<td>Quarter is 1-4. Year is between 1950 and current year + 5.</td>
<td>TF.FN.Sales(period=0CQ)</td>
<td>Quarterly sales from the last calendar quarter.</td>
</tr>
<tr>
<td>Calendar Semi-Annual</td>
<td>Semi-Annual is 1-2.</td>
<td>TF.FN.Sales(period=0CS)</td>
<td>Sales form the last completed calendar semi-annual period.</td>
</tr>
<tr>
<td>Calendar Year</td>
<td>Year is between 1950 and current year + 5.</td>
<td>TF.FN.Sales(period=0CY)</td>
<td>Annual sales from the last calendar year.</td>
</tr>
<tr>
<td>Calendar Year/Quarter</td>
<td>Quarter is 1-4. Year is between 1950 and current year + 5.</td>
<td>TF.FN.Sales(period=1QCY0)</td>
<td>Quarterly sales from the first calendar quarter of the last calendar year.</td>
</tr>
<tr>
<td>Calendar Year/Semi-Annu al</td>
<td>Semi-Annual is 1-2. Year is between 1950 and current year + 5.</td>
<td>TF.FN.Sales(period=1SCY0)</td>
<td>Sales from the first semi-annual period of the last calendar year.</td>
</tr>
<tr>
<td>Fiscal Quarter</td>
<td>Quarter is any integer within the limitations of the available content.</td>
<td>TF.FN.Sales(period=0FQ)</td>
<td>Quarterly sales from the last fiscal quarter.</td>
</tr>
<tr>
<td>Fiscal Year</td>
<td>Year is between 1950 and current year + 5.</td>
<td>TF.FN.Sales(period=0FY)</td>
<td>Annual sales from the last fiscal year.</td>
</tr>
<tr>
<td>Fiscal Year/Quarter</td>
<td>Quarter is 1-4. Year is between 1950 and current year + 5.</td>
<td>TF.FN.Sales(period=1QFY0)</td>
<td>Quarterly sales from the first quarter of the last fiscal year.</td>
</tr>
<tr>
<td>Fiscal Year/Semi-Annu al</td>
<td>Semi-Annual is 1-2. Year is between 1950 and current year + 5.</td>
<td>TF.FN.Sales(period=1SY0)</td>
<td>Sales from the first semi-annual period of the last fiscal year.</td>
</tr>
</tbody>
</table>
### Fiscal Interim

Interims reference quarters for companies that report four times per year, and semi-annuals for companies that report two times per year. Interim is any integer within the limitations of the available content.

<table>
<thead>
<tr>
<th>Samples</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF.FN.Sales(period=FI0)</td>
<td>Sales from the most recent fiscal period. For companies that report four times per year, Fiscal Interim returns quarterly data. For companies that report two times per year, Fiscal Interim returns semi-annual data.</td>
</tr>
</tbody>
</table>

### Learn Frequencies (Date Syntax)

It is not mandatory to include a frequency in the start date or end date. If you do not include a frequency, the default is what is in the frequency parameter (see “Frequency (Parameter)” on page 18). For more information on parameters, see the List of Parameters.

The table below shows available frequencies.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Display Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>DY</td>
<td>Trading Years</td>
</tr>
<tr>
<td>DYTD</td>
<td>Trading Calendar Year-to-Date</td>
</tr>
<tr>
<td>DQTD</td>
<td>Trading Calendar Quarter-to-Date</td>
</tr>
<tr>
<td>DQ</td>
<td>Trading Quarters</td>
</tr>
<tr>
<td>DM</td>
<td>Trading Months</td>
</tr>
<tr>
<td>CMTD</td>
<td>Calendar Month-to-Date</td>
</tr>
<tr>
<td>CWTD</td>
<td>Calendar Week-to-Date</td>
</tr>
<tr>
<td>DMTD</td>
<td>Trading Month-to-Date</td>
</tr>
<tr>
<td>DWTD</td>
<td>Trading Week-to-Date</td>
</tr>
<tr>
<td>FITD</td>
<td>Fiscal Interim-to-Date</td>
</tr>
<tr>
<td>FSTD</td>
<td>Fiscal Semi-annual-to-Date</td>
</tr>
<tr>
<td>FTTD</td>
<td>Fiscal Tri-mester-to-Date</td>
</tr>
<tr>
<td>CSTD</td>
<td>Calendar Semi-annual-to-Date</td>
</tr>
<tr>
<td>Frequency</td>
<td>Display Name</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------------</td>
</tr>
<tr>
<td>D</td>
<td>Trading Day</td>
</tr>
<tr>
<td>W</td>
<td>Week</td>
</tr>
<tr>
<td>M</td>
<td>Month</td>
</tr>
<tr>
<td>FQ</td>
<td>Fiscal Quarter</td>
</tr>
<tr>
<td>FT</td>
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<td>FS</td>
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<tr>
<td>FI</td>
<td>Fiscal Interim</td>
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<td>FY</td>
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<tr>
<td>C</td>
<td>Calendar Day</td>
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<td>CW</td>
<td>Calendar Week</td>
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<td>CM</td>
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<td>CQ</td>
<td>Calendar Quarter</td>
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<tr>
<td>CT</td>
<td>Calendar Trimester</td>
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<td>Calendar Semi-Annual</td>
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<td>CY</td>
<td>Calendar Year</td>
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<tr>
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<td>AM</td>
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<td>AQ</td>
<td>Actual Quarter</td>
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<tr>
<td>AY</td>
<td>Actual Year</td>
</tr>
<tr>
<td>WTD</td>
<td>Week-to-Date</td>
</tr>
<tr>
<td>MTD</td>
<td>Month-to-Date</td>
</tr>
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</table>
### Frequency | Display Name
---|---
FQTD | Fiscal Quarter-to-Date
DW | Trading Weeks
FYTD | Fiscal Year-to-Date
CQTD | Calendar Quarter-to-Date
CYTD | Calendar Year-to-Date
J | Julian
R | Range
MI | I/B/E/S Monthly Updates
SIM | Short-Interest Month
SUN | Sunday
MON | Monday
TUE | Tuesday
WED | Wednesday
THUR | Thursday
FRI | Friday
SAT | Saturday

### Date and Period Builder

Thomson Reuters Spreadsheet Link Date and Period Builder allows you to specify date composition parameters.

#### To use the Date and Period Builder

1. For absolute dates, select **Absolute**.
   a. To select a calendarized date, select a month, year, and date.
   b. To set a calendarized date or other time period and adjustments, click **Advanced**, select **Absolute**, and select a time period and its related values from the appropriate drop-downs.

2. For absolute periods, select **Absolute**.
   a. To select a calendarized period, select a month, year, and date.
b. To set a calendarized time period, select **Absolute**, and select a time period and its related values from the appropriate drop-downs.

3. For relative dates, select **Relative**.
   a. To select an offset and frequency for the data offset, make selections from the **Offset** and **Frequency** drop-downs.
   b. To select relative dates with adjustments, click **Advanced** (when building a date only, not a period), select **Relative**, and select a time period and its related selections from the drop-downs. Offsets allow you to select historical parameters, where the current date is zero. For example, a trading day with a -2 offset is two days ago.

4. For relative periods, select **Relative**.
   a. To select an offset and frequency for the data offset, make selections from the **Offset** and **Frequency** drop-downs.
   b. To select relative periods with adjustments, select **Relative**, and select a time period and its related selections from the drop-downs. Offsets allow you to select historical parameters, where the current date is zero. For example, a trading day with a -2 offset is two days ago.

5. To add a frequency adjustment, select an adjustment and frequency from the appropriate drop-downs. Adjustments are additional to offsets. For example, if your offset is -30 trading days and your adjustment is -30 trading days, your results will be -60 trading days.

6. Click **OK**.
Chapter 24  Keyboard Shortcuts

Thomson Reuters Spreadsheet Link had keyboard shortcuts to offer you a faster workflow. The Thomson Reuters menu in Excel 2003 includes underlines to show you the shortcuts. To view the keyboard shortcuts on the Thomson Reuters Spreadsheet Link ribbon in Excel 2007, press ALT.

You must select the Thomson Reuters menu (Excel 2003) or tab (Excel 2007 or 2010) before using these keyboard shortcuts.

Press all two-letter codes simultaneously with the Alt key.

To use the keyboard shortcuts with the Excel 2003 menu or Excel 2007 ribbon

- Press Alt + the underlined letter (menu) or ALT + the key on the floating button (ribbon) to access the window or item associated with the word.

  The shortcut keys are case-sensitive.

Example: To use the keyboard shortcuts to build a screen using the Thomson Reuters menu in Excel 2003 or ribbon in Excel 2007

1. In Excel 2003, press Alt + m to open the Thomson Reuters menu.
   - In Excel 2007, press Alt + s to view the keyboard shortcuts on the Thomson Reuters tab.
2. Press Alt + bs to open Screen Builder.

<table>
<thead>
<tr>
<th>To access</th>
<th>In this group</th>
<th>Press Alt + s +</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifier Lookup (on page 29)</td>
<td>Look Up</td>
<td>i</td>
</tr>
<tr>
<td>Constituent Lookup (on page 5)</td>
<td>Look Up</td>
<td>co</td>
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<tr>
<td>Data Item Lookup (on page 7)</td>
<td>Look Up</td>
<td>d</td>
</tr>
<tr>
<td>Watchlist Builder (on page 118)</td>
<td>Build</td>
<td>bw</td>
</tr>
<tr>
<td>Funded Portfolio Builder (on page 115)</td>
<td>Build</td>
<td>bf</td>
</tr>
<tr>
<td>Report Builder (on page 120)</td>
<td>Build</td>
<td>br</td>
</tr>
<tr>
<td>Chart Builder (on page 46)</td>
<td>Build</td>
<td>bc</td>
</tr>
<tr>
<td>Expression Builder (on page 53)</td>
<td>Build</td>
<td>be</td>
</tr>
<tr>
<td>To access</td>
<td>In this group</td>
<td>Press Alt + s +</td>
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<td>---------------</td>
<td>-----------------</td>
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<tr>
<td>Aggregate Builder (on page 41)</td>
<td>Build</td>
<td>ba</td>
</tr>
<tr>
<td>Screen Builder (on page 134)</td>
<td>Build</td>
<td>bs</td>
</tr>
<tr>
<td>Multi-Factor Ranking (on page 147)</td>
<td>Build</td>
<td>bm</td>
</tr>
<tr>
<td>Proprietary Data (see “Proprietary Data Manager” on page 156)</td>
<td>Build</td>
<td>bp</td>
</tr>
<tr>
<td>Templates (see &quot;Template Library&quot; on page 3)</td>
<td>Manage</td>
<td>t</td>
</tr>
<tr>
<td>My Workbench (on page 179)</td>
<td>Manage</td>
<td>m</td>
</tr>
<tr>
<td>Auto Calculation (see &quot;Calculation Mode&quot; on page 204)</td>
<td>Configure</td>
<td>ca</td>
</tr>
<tr>
<td>Stream Data (see &quot;Work Offline or Disable Function Calls&quot; on page 205)</td>
<td>Configure</td>
<td>sd</td>
</tr>
<tr>
<td>Click Thru Audit (see &quot;Click Thru&quot; on page 199)</td>
<td>Configure</td>
<td>u</td>
</tr>
<tr>
<td>Refresh Data (see &quot;Refresh Cells&quot; on page 203)</td>
<td>Configure</td>
<td>r</td>
</tr>
<tr>
<td>Convert Excel</td>
<td>Configure</td>
<td>x</td>
</tr>
<tr>
<td>Options (on page 185)</td>
<td>Configure</td>
<td>o</td>
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<tr>
<td>About</td>
<td>Learn</td>
<td>a</td>
</tr>
<tr>
<td>Help</td>
<td>Learn</td>
<td>h</td>
</tr>
<tr>
<td>Diagnostics</td>
<td>Learn</td>
<td>g</td>
</tr>
</tbody>
</table>
To access | In this group | Press Alt + s +
---|---|---
Online/Offline (see "Work Offline or Disable Function Calls" on page 205) | Status | n
Sync’d (see "Work Offline or Disable Function Calls" on page 205) | Status | sy
Chapter 25  Thomson Reuters Spreadsheet Link Consulting Services and Support

As a Thomson Reuters Spreadsheet Link subscriber, you have access to the Thomson Reuters Business Services Consulting team. Consultants can help you create unique, high-end proprietary models designed specifically for your investment approach. Additionally, consultants can provide you with comprehensive on-site training and superior ongoing support.

For support issues, contact the Business Services Consulting team at trconsulting@thomsonreuters.com, or use the following telephone numbers:

<table>
<thead>
<tr>
<th>Region</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>+1 877 877 5435</td>
</tr>
<tr>
<td>Europe, Middle East, and Africa</td>
<td>+44 870 787 6846</td>
</tr>
<tr>
<td>Asia</td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>0011 800 2535 9108</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>+852 2535 9108</td>
</tr>
<tr>
<td>Japan</td>
<td>0120 555 358</td>
</tr>
<tr>
<td>Singapore</td>
<td>001 800 2535 9108</td>
</tr>
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Index

1
1-Day Sum (Parameter) • 20, 28

A
About Dates (Date Syntax) • 218
About My Workbench • 189
About this Document • 1
ABS (Mathematical Functions) • 69, 95
Absolute Dates (Date Syntax) • 219
Access Click Thru • 210
ACOS (Mathematical Functions) • 69, 95, 96
Add a Data Item at the Cursor (Expression Builder) • 58, 59, 60, 61
Add a Data Item to the End of an Expression (Expression Builder) • 58, 59, 60
Add a Function Around a Selected Part of an Expression (Expression Builder) • 57, 59, 61, 63
Add a Function Around an Expression (Expression Builder) • 57, 59, 61, 63
Add a Function at the Cursor (Expression Builder) • 57, 60, 61, 63, 149
Add a Function to the End of an Expression (Expression Builder) • 57, 59, 61, 63
Add an Exchange to a Screen (Screen Builder) • 145
Add an Instrument Type to a Screen (Screen Builder) • 146
Add Commonly Used Items to Screening Criteria • 143, 144, 147
Add Custom Criteria to a Screen (Screen Builder) • 141, 144, 150
Add Exchange, Geography, Sector, or Industry through the Quick List to Screening Criteria (Screen Builder) • 141, 143
Add Geographical Region to a Screen (Screen Builder) • 147
Add Industry or Sector to a Screen (Screen Builder) • 145
Add Key Statistics through the Quick List to Screening Criteria (Screen Builder) • 141, 144
Add Key Statistics to a Screen (Screen Builder) • 147
Add the Country of Exchange to a Screen (Screen Builder) • 146
Add Whether a Private Company is Private Equity Backed to Screening Criteria (Screen Builder) • 141, 144
Adjust and Apply Formats (Report Builder) • 126, 130, 139
Adjustment (Parameter) • 16, 28, 164
Advanced Options for Looking up a Private Company or Public and Private Companies (Identifier Lookup) • 31, 35, 128, 155
Advanced Options for Looking up a Public Company (Identifier Lookup) • 14, 31, 33, 128, 155
Advanced Options for Looking up an Equity Index (Identifier Lookup) • 31, 36
Advanced Options for Looking up Foreign Exchange Rates (Identifier Lookup) • 33, 39
Advanced Options for Looking up IBES Global Aggregates (Identifier Lookup) • 32, 38
Aggregate Builder • 44, 192, 226
Aggregate Types (Aggregate Builder) • 44, 47
Align Type (Parameter) • 16, 28
Analytical Functions • 63, 64, 66, 69
AND (Logical Functions) • 70, 93, 94
Apply an Identifier to a Data Item • 13
ASIN (Mathematical Functions) • 70, 95, 96
ATAN (Mathematical Functions) • 70, 95, 96
AV (Availability Functions) • 70, 74, 75
Availability Functions • 69, 74
AVG (Same as MEAN) (Statistical Functions) • 70, 104, 105
B
Break Links (Linking) • 179
Breakpoint Reports (Multi-Factor Ranking) • 162, 163
Brokers (Parameter) • 16, 28
Browse by Category (Data Item Lookup) • 7, 8, 10, 15, 64
Browse for a Data Item by Category (Expression Builder) • 57, 59, 60, 62
Browse for Functions by Category (Expression Builder) • 57, 59, 61, 62, 63
Build a Multi-Factor Ranking • 154, 159, 160, 161, 162
Build a Report from Results (Screen Builder) • 152
Build a Report with a Single Data Item • 138
Build a Report with Financial Statements • 137
Build a Screen (Screen Builder) • 140, 149, 150, 151, 153
Build a Watchlist • 154, 156, 160
Build an Expression by Typing in the Expression Box (Expression Builder) • 63
Build an Expression from a Saved Expression (Expression Builder) • 65, 66
Build an Expression Starting with Analytical Functions (Expression Builder) • 61, 65
Build an Expression Starting with Data Items (Expression Builder) • 57, 61, 65
Build an Expression Using the Auto Complete Option (Expression Builder) • 64
Build Dates (Date Syntax) • 218

Calculation Date Property (Expression Properties) • 70, 76, 78
Calculation Mode • 200, 215, 226
Calendar (Parameter) • 17, 30
CASE (String Functions) • 70, 114, 115
CEILING (Mathematical Functions) • 70, 95, 97
Cell Format and Click Thru • 211
Change Broker Settings (Options) • 199
Change Calendar Methodology Defaults (Options) • 197
Change Connection Settings (Options) • 196
Change Country Settings (Options) • 201
Change Criteria after Running a Screen (Screen Builder) • 152
Change Currency of Values after Running a Screen (Screen Builder) • 152
Change Currency Settings (Options) • 17, 152, 203
Change Display Settings for Click Thru Audit (Options) • 206, 207, 211
Change Error Message Display Settings (Options) • 154, 205
Change Exchange Calendar Settings (Options) • 17, 203
Change Fiscal Calendar Settings (Options) • 204
Change Identifier Matching Settings (Options) • 198
Change Input Date Settings (Options) • 202
Change Language Settings (Options) • 203
Change Logging Detail Defaults (Options) • 198
Change Lookback Defaults (Options) • 197
Change Null Tolerance Defaults (Options) • 44, 196
Change Output Date Settings (Options) • 202
Change Regional Settings (Options) • 201
Change Reporting State Defaults (Options) • 196
Change Results Display (Multi-Factor Ranking) • 162
Change Results Display (Screen Builder) • 152
Change Statistic Currency Settings (Options) • 203
Change the View of the Results (Identifier Lookup) • 14, 32, 33, 34, 36, 37, 39, 40, 41
Change Update Settings (Options) • 200, 215
Change Your Output Options (Data Item Lookup) • 11
CHARPOS (String Functions) • 70, 114, 115
Chart Builder • 49, 226
Clean-up (Parameter) • 17, 30
Click Thru • 210, 215, 227
COMPOUND GROWTH RATE (Linear Trend & Growth Rate Functions) • 70, 83, 84
Constituent Lookup • 5, 225
CONTAINS (String Functions) • 70, 115
CORREL (Linear Trend & Growth Rate Functions) • 70, 82, 83
COS (Mathematical Functions) • 70, 95, 97
COUNT (Statistical Functions) • 70, 104, 105
Create a Custom Aggregate (Aggregate Builder) • 44
Create a Custom Chart (Chart Builder) • 51
Create a Funded Portfolio • 121
Create a Multiple Equity Price Chart (Chart Builder) • 50
Create a Shares Traded Analysis Chart (Chart Builder) • 54
Create a Single Equity Price Chart (Chart Builder) • 49
Create a Total Return Chart (Chart Builder) • 53
Create a Watchlist • 123, 124
Create Aggregate Sub-folders (My Workbench) • 192
Create an Ownership Report (Report Builder) • 129
Create Data Items (Proprietary Data Manager) • 164, 167, 168
Create Expression Sub-folders (My Workbench) • 191
Create Ranking Sub-folders (My Workbench) • 193
Create Screen Sub-folders (My Workbench) • 190
Create Subfolders for Watchlists and Portfolios (My Workbench) • 190
Create Template Sub-Folders (My Workbench) • 193
Currency • 17, 30
Currency Property (Expression Properties) • 70, 76
Custom Reports (Report Builder) • 126
Customize Your Export • 49, 50, 52, 53, 54, 55
Customize Your Export (Aggregate Builder) • 45, 47, 194
Customize Your Export (Constituent Lookup) • 5, 6, 194
Customize Your Export (Data Item Lookup) • 8, 9, 10, 15
Customize Your Export (Expression Builder) • 58, 63, 64, 65, 66, 69, 194
Customize Your Export (Identifier Lookup) • 32, 33, 34, 36, 37, 39, 40, 41
Customize Your Export (Multi-Factor Ranking) • 155, 160, 161, 162, 195
Customize Your Export (Report Builder) • 127, 130, 138, 139
Customize Your Export (Screen Builder) • 142, 151, 152, 194
Cut, Copy, or Paste a Link in a Word document (Linking) • 183

D
Data Direction (Parameter) • 18, 30
Data Item Lookup • 7, 61, 164, 167, 225
Data Types (Proprietary Data Manager) • 164, 165
Datastream Country Identification Prefixes • 14, 31, 41
Date and Period Builder • 65, 66, 67, 126, 138, 159, 218, 223
Date Property (Expression Properties) • 70, 76
Date Syntax • 10, 13, 218
DAYS_BETWEEN (General Functions) • 69, 70, 80, 82
Deactivate Linking Keyboard Shortcuts (Linking) • 187
Delete a Data Item (Proprietary Data Manager) • 169
Delete a Ranking (Multi-Factor Ranking) • 161
Delete a Screen (Screen Builder) • 151
Delete Broken Links (Linking) • 180
Delete Custom Aggregates (My Workbench) • 192
Delete Expressions (My Workbench) • 191
Delete Rankings (My Workbench) • 194
Delete Screen Criteria (Screen Builder) • 141, 150
Delete Screens (My Workbench) • 191
Delete Subfolders for Watchlists and Portfolios (My Workbench) • 190
Delete Templates (My Workbench) • 193
Description Property (Expression Properties) • 70, 77
Disable Function Calls • 200, 217
Display Name Property (Expression Properties) • 70, 76, 77
DOES_NOT_CONTAIN (String Functions) • 70, 115, 116
DOWN_SEQ (Statistical Functions) • 70, 104, 105

E
Edit a Data Item (Proprietary Data Manager) • 169
Edit a Number (Click Thru Audit) • 211
Edit a Saved Expression (Expression Builder) • 65
Edit Default Keyboard Shortcut Values for Currency (Linking) • 186
Index

Edit Default Keyboard Shortcut Values for Date (Linking) • 186
Edit Default Keyboard Shortcut Values for Numbers (Linking) • 187
Edit Default Keyboard Shortcuts (Linking) • 184, 187
Edit Default Keyboard Shortcuts with Colors (Linking) • 185
Edit Default Keyboard Shortcuts with Thickness of Lines (Linking) • 185
Edit Individual Links (Linking) • 183
Edit Screen Criteria (Screen Builder) • 141, 150, 151, 152
Edit the Keystrokes of Default Keyboard Shortcuts (Linking) • 184, 185, 186, 187
Enable or Disable Click Thru • 210
Enable or Disable Real-Time Data • 213, 214, 215
End Date (Parameter) • 18, 27, 65, 66, 67
EndNum (Parameter) • 18, 28
Error Logs (Multi-Factor Ranking) • 162, 163
EXP (Mathematical Functions) • 70, 95, 97
Export (Proprietary Data Manager) • 169
Export from Excel (Linking) • 175
Export from Excel to PowerPoint (Linking) • 176
Export from Excel to Word (Linking) • 176
Export Options to Excel (Options) • 208
Export to Excel (My Workbench) • 189, 190, 191, 192, 193, 194
Expression Area (Expression Builder) • 58, 61, 64, 67
Expression Builder • 44, 57, 67, 69, 155, 191, 217, 226
Expression Properties • 69, 76
EXPSMOOTH (Statistical Functions) • 70, 104, 106
Filter Data Items (Data Item Lookup) • 7, 8, 9, 45, 52, 58, 60, 129, 148, 156, 157
Fiscal Period End Property (Expression Properties) • 70, 76, 78
FLOOR (Mathematical Functions) • 71, 95, 97
Formula Bar (Data Item Lookup) • 10, 60
FRAC (Mathematical Functions) • 71, 95, 98
Frequency (Parameter) • 19, 27, 65, 66, 67, 221
Funded Portfolio Builder • 121, 123, 154, 189, 225

G
General Functions • 80
Generate a Ranking (Multi-Factor Ranking) • 160, 161, 162
Generate a Report on Links (Linking) • 180
GMEAN (Statistical Functions) • 71, 104, 106

H
HAVG (Statistical Functions) • 71, 104, 106
Highlight All the Links in a Presentation or Document (Linking) • 182

I
Identifier Lookup • 31, 50, 51, 53, 54, 144, 225
IF (Logical Functions) • 71, 94
Illegal Characters (Proprietary Data Manager) • 164, 165
Import a Chart, Text, Graph, or Named Range into PowerPoint from Excel (Linking) • 171, 173
Import a Chart, Text, Graph, or Named Range into Word from Excel (Linking) • 171, 173, 175
Import a Funded Portfolio • 123
Import a List • 45, 127, 128, 154, 155, 160
Import a Saved Screen • 45, 127, 128, 154, 156, 160
Import a Table into PowerPoint from Excel (Linking) • 172
Import a Table into Word from Excel (Linking) • 174
Import a Watchlist • 123, 124
Import and Export Content (Linking) • 171, 178
Import into PowerPoint from Excel (Linking) • 171

F
Factor Type (Parameter) • 19, 29
Filter by Custom Expression (Screen Builder) • 147, 148, 149
Filter by Data Item (Screen Builder) • 147, 148
Filter by Saved Screen (Screen Builder) • 148
Import into Word from Excel (Linking) • 173, 175
Import or Export Linking Keyboard Shortcuts (Linking) • 187
Import Values for Proprietary Data Items (Proprietary Data Manager) • 165, 167
IN (General Functions) • 71, 80
Include Excluded Estimates (Parameter) • 19, 24, 29
Include Stopped Estimates (Parameter) • 19, 25, 29
INDEX (Relative & Value Functions) • 48, 71, 100, 101
INDEXTD (Relative & Value Functions) • 48, 71, 100, 101
Information Logs (Options) • 198
INT (Mathematical Functions) • 71, 95, 98
INTERCEPT (Linear Trend & Growth Rate Functions) • 71, 82, 84
K
Keyboard Shortcuts • 183, 225
Keyboard Shortcuts (Linking) • 183
L
Lag (Parameter) • 19, 30
Learn About Creating a Time Series (Data Item Lookup) • 13
Learn Frequencies (Date Syntax) • 10, 13, 221
Learn More about a Data Item (Data Item Lookup) • 7, 8, 9, 10, 45, 52, 58, 60, 129, 148, 156, 157, 159
LEFT (String Functions) • 71, 115, 116
Linear Trends & Growth Rates • 69, 82
Link Options (Linking) • 172, 174, 175, 176, 177
Linking • 171
List of Default Keyboard Shortcuts (Linking) • 183
LN (Mathematical Functions) • 71, 95, 98
Lock or Unlock Links (Linking) • 180
LOG (Mathematical Functions) • 71, 95, 99
Logical Functions • 69, 93
Look up a Company (Identifier Lookup) • 13, 49
Look up a Company, Equity Index, or IBES Global Aggregate (Identifier Lookup) • 31
Look Up a Data Item • 155, 156, 162
Look Up Constituents (Constituent Lookup) • 5
Look up Foreign Exchange Rates (Identifier Lookup) • 32, 41
Look Up Identifiers • 44, 45, 48, 57, 64, 127, 128, 129, 130, 154, 155, 160, 162
Look Up Identifiers (Funded Portfolio Builder) • 121, 122, 123, 124, 125, 156
LOWERCAASE (String Functions) • 71, 115, 116
M
Make Data Item Selections (Chart Builder) • 49, 51, 52
Make Data Item Selections for a Custom Report (Report Builder) • 126, 129, 152
Make Data Item Selections for an Ownership Report (Report Builder) • 130
Manage Custom Aggregates (My Workbench) • 192
Manage Expressions (My Workbench) • 65, 191
Manage Links (Linking) • 179, 188
Manage Lists (My Workbench) • 189
Manage Proprietary Data Items (Proprietary Data Manager) • 168
Manage Rankings (My Workbench) • 193
Manage Screens (My Workbench) • 190
Manage Templates (My Workbench) • 192
Mathematical Functions • 69, 95
Mathematical Operators • 57, 66, 68, 118, 149
MAX (Statistical Functions) • 71, 104, 107
MAX_INDEX (Statistical Functions) • 71, 104, 107
MEDIAN (Statistical Functions) • 71, 104, 107
Methodology (Parameter) • 20, 30
MIN (Statistical Functions) • 71, 104, 108
MIN_INDEX (Statistical Functions) • 71, 104, 108
Modify Parameters using Hyperlinks (Expression Builder) • 62, 68
Multi-Factor Ranking • 154, 193, 226
My Workbench • 189, 226
N
Name Property (Expression Properties) • 71, 76, 78
NOT_IN (General Functions) • 71, 80
O
Offset (Parameter) • 20, 28
Open a Saved Aggregate (Aggregate Builder) • 46, 47
Open a Saved Ranking (Multi-Factor Ranking) • 160
Open a Screen (Screen Builder) • 150, 151
Open Log Folder or Send Logs (Options) • 198
Options • 35, 196, 227
OR (Logical Functions) • 71, 94
OUT_OF_RANGE (General Functions) • 71, 80, 81
Output (Parameter) • 20, 30
Owner Filter (Parameter) • 21, 25, 29
Owner Types (Report Builder) • 129, 131
Owner Views (Parameter) • 21, 29
Ownership Reports (Report Builder) • 129
P
Parameter Definitions - Alphabetical List • 10, 16, 60, 205
Parameter Definitions - Categorized List • 27
Parent and Consolidated (Parameter) • 21, 29
Parent and Consolidated Type (Parameter) • 22, 29
PERCENT_CHG (Mathematical Functions) • 71, 95, 99
Perform a Quick Import of an Object from Excel into PowerPoint (Linking) • 171, 173, 175, 177
Perform a Quick Import of an Object from Excel into Word (Linking) • 171, 173, 175, 177
Period and Natural Period (Parameter) • 22, 27
POW (Mathematical Functions) • 71, 95, 99
Prev Window (Parameter) • 23, 28
Print a Source Document (Click Thru Audit) • 211
Proprietary Data Manager • 164, 226
R
RANGE (General Functions) • 71, 80, 81
RATE (Linear Trend & Growth Rate Functions) • 72, 83, 84
RATEC (Linear Trend & Growth Rate Functions) • 72, 83, 85
RATED (Linear Trend & Growth Rate Functions) • 72, 83, 85
RATEE (Linear Trend & Growth Rate Functions) • 72, 83, 86
RATEI (Linear Trend & Growth Rate Functions) • 72, 83, 86
RATES (Linear Trend & Growth Rate Functions) • 72, 83, 87
RCORREL (Linear Trend & Growth Rate Functions) • 72, 82, 87
Redirect Links (Linking) • 182
Reference a Cell (Aggregate Builder) • 47
Reference a Cell (Report Builder) • 57, 64, 127, 130, 147
Reference Identifiers by Cell Before Exporting (Data Item Lookup) • 7, 9, 15
Refresh a Workbook • 214
Refresh Cells • 214, 217, 227
Refresh Links (Linking) • 178
Refresh Links while Managing Content (Linking) • 178, 181
Refresh Selected Cells (Refresh) • 214
Refresh the Active Worksheet (Refresh) • 214
Refresh the Values of a Data Item (Proprietary Data Manager) • 169
RECCORREL (Linear Trend & Growth Rate Functions) • 72, 83, 87
REGINTERCEPT (Linear Trend & Growth Rate Functions) • 72, 83, 88
REGRSQUARE (Linear Trend & Growth Rate Functions) • 72, 83, 89
REGSLOPE (Linear Trend & Growth Rate Functions) • 72, 83, 88
REGSLOPESTD (Linear Trend & Growth Rate Functions) • 72, 83, 89
REGSTDDERR (Linear Trend & Growth Rate Functions) • 72, 83, 90
REL (Relative & Value Functions) • 72, 100, 101
Relative and Value Functions • 69, 100
Relative Dates (Date Syntax) • 219
RELT (Relative & Value Functions) • 48, 72, 101, 102
RELX (Relative & Value Functions) • 72, 101, 102
Reorder Screen Criteria (Screen Builder) • 141, 149
Report Builder • 126, 152, 225
Reporting State (Parameter) • 24, 28, 137
Reuters As Reported Fundamental Data Reports (Report Builder) • 137
RIGHT (String Functions) • 72, 115, 117
RINTERCEPT (Linear Trend & Growth Rate Functions) • 72, 82, 90
Roll Periods (Parameter) • 24, 28
ROUND (General Functions) • 72, 80, 81
RRSQUARE (Linear Trend & Growth Rate Functions) • 72, 82, 90
RSI (Statistical Functions) • 72, 104, 108
RSLOPE (Linear Trend & Growth Rate Functions) • 72, 83, 91
RSLOPESTD (Linear Trend & Growth Rate Functions) • 72, 83, 91
RSQUARE (Linear Trend & Growth Rate Functions) • 73, 82, 92
RSTDERR (Linear Trend & Growth Rate Functions) • 73, 82, 92
Run a Screen (Screen Builder) • 150, 151, 152, 153

S
Save an Expression (Expression Builder) • 64, 65, 66, 216
Save Items While in Cache Mode • 216
Save Results as a Watch List (Screen Builder) • 151
Save Results as a Watchlist (Multi-Factor Ranking) • 161
Scale (Parameter) • 24, 30, 138
Screen Builder • 140, 154, 190, 226
Search by Data Item Name (Data Item Lookup) • 8, 9, 10, 15
Search for a Data Item by Name (Expression Builder) • 57, 58, 60, 62
Search for and View Aggregates (My Workbench) • 192
Search for and View Expressions (My Workbench) • 191
Search for and View Rankings (My Workbench) • 194
Search for and View Screens (My Workbench) • 190
Search for and View Templates (My Workbench) • 193
Search for and View Watchlists and Portfolios (My Workbench) • 190
Search for Functions by Keyword (Expression Builder) • 57, 59, 61, 62
Search for Identifiers Before Exporting (Data Item Lookup) • 7, 9, 13
Search for Proprietary Data Items (Proprietary Data Manager) • 167, 168
Select a Date (Data Item Lookup) • 10, 60, 159
Select a Time Frame for your Report (Report Builder) • 138
Select Data Item (Aggregate Builder) • 44, 45
Set a Parameter for a Function (Expression Builder) • 62, 63, 68
Set Default Link Options (Linking) • 171, 173, 175, 177
Set Parameters (Data Item Lookup) • 7, 9, 15, 45, 52, 58, 60, 64, 65, 67, 129, 148, 156, 157, 164
Set Parameters for Data Items (Expression Builder) • 57, 60
Set Standardized Names (Linking) • 171, 172, 174, 176, 179
Set Time Series Parameters for Expressions (Expression Builder) • 67
Save a Custom Aggregate (Aggregate Builder) • 46, 47, 216
Save a Funded Portfolio or Watchlist • 121, 123, 124, 125, 156
Save a Ranking (Multi-Factor Ranking) • 155, 159, 161
Save a Screen (Screen Builder) • 148, 150, 216
Save a Source Document as a PDF (Click Thru Audit) • 211
Save a Source Workbooks and Target Presentation or Document to a Zip File (Linking) • 188
Weighting Methods (Aggregate Builder) • 44, 46
WGMEAN (Statistical Functions) • 74, 105, 111
WHAVG (Statistical Functions) • 74, 105, 112
Window Size (Parameter) • 27, 28
WMEDIAN (Statistical Functions) • 74, 105, 112
Work Offline or Disable Function Calls • 216, 226, 227
Work with Data in Cache Mode • 216
Work with Results (Multi-Factor Ranking) • 155, 160, 161
Work with Results (Screen Builder) • 141, 151
WSTD (Statistical Functions) • 74, 105, 109, 112
WSTDP (Statistical Functions) • 74, 105, 113
WVAR (Statistical Functions) • 74, 105, 114
WVARP (Statistical Functions) • 74, 105, 113
X
XOR (Logical Functions) • 74, 94
Z
Zero Available (Availability Functions) • 74, 75