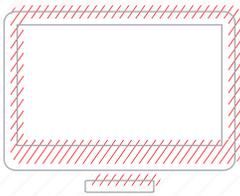
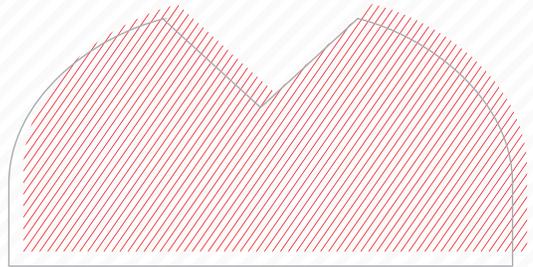
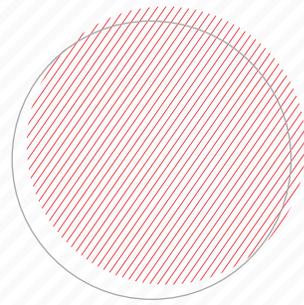
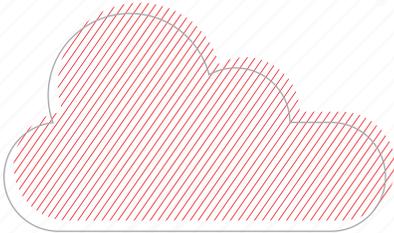
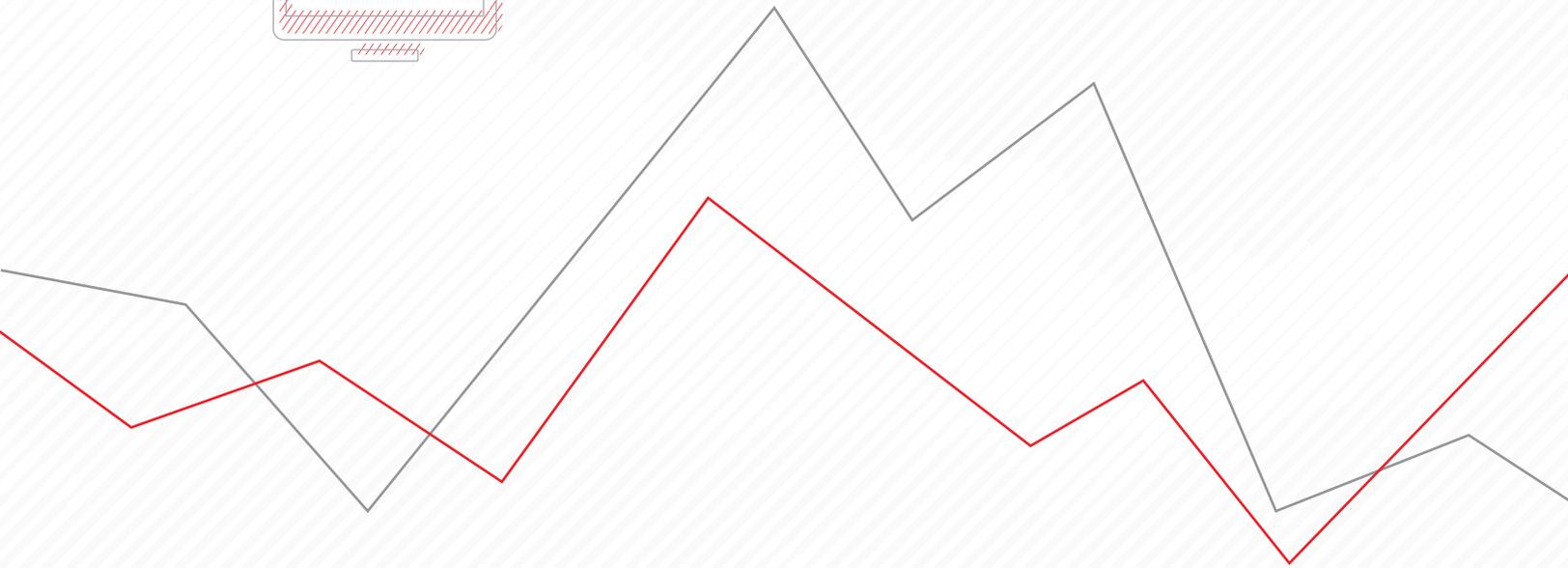


# Using the Morningstar Excel Add-In

Onboarding Guide



**MORNINGSTAR** Direct



---

Copyright © 2020 Morningstar, Inc. All rights reserved.

The information contained herein: (1) is proprietary to Morningstar and/or its content providers; (2) may not be copied or distributed; (3) is not warranted to be accurate, complete or timely; and (4) does not constitute advice of any kind. Neither Morningstar nor its content providers are responsible for any damages or losses arising from any use of this information. Any statements that are nonfactual in nature constitute opinions only, are subject to change without notice, and may not be consistent across Morningstar. Past performance is no guarantee of future results.

# Contents

Overview .....	4
What basic formulas does the Morningstar Excel Add-In offer? .....	4
<b>Installing and Configuring the Morningstar Excel Add-In .....</b>	<b>5</b>
Overview .....	5
Exercise 1: Install the Morningstar Excel Add-In .....	5
Exercise 2: Log in to the Morningstar Excel Add-In .....	6
Exercise 3: Change the settings for the Morningstar Excel Add-In .....	8
Exercise 4: Update the settings for Microsoft® Excel® .....	10
<b>Retrieving the Members of a Saved List or Search .....</b>	<b>11</b>
Overview .....	11
Exercise 5: Download the sample spreadsheet .....	11
Exercise 6: Retrieve an existing list of investments .....	11
What are the component parts of the MSMEMBER formula? .....	13
<b>Retrieving Supplementary Data for Investments .....</b>	<b>15</b>
Overview .....	15
Exercise 7: Retrieve supplementary data points .....	15
Exercise 8: Apply a formula to additional investments .....	17
Exercise 9: Retrieve multiple data points at once .....	19
<b>Retrieving a Historical Series of Data Points for Investments .....</b>	<b>20</b>
Overview .....	20
Exercise 10: Retrieve time series data points .....	20
Exercise 11: Manually modify a formula .....	23
Exercise 12: Retrieve standard deviation values .....	24
Exercise 13: Add the tracking error .....	26
Exercise 14: Add the Sharpe Ratio .....	28
Exercise 15: Link formulas to a reference cell .....	30
Exercise 16: Retrieve Historical Series data .....	31
<b>Retrieving a Portfolio's Holdings .....</b>	<b>36</b>
Overview .....	36
Exercise 17: Retrieve portfolio holdings for a fund using the MSHOLDING formula .....	36
Exercise 18: Retrieve only the top 10 holdings for a fund .....	38
Exercise 19: Retrieve historical positions for a fund .....	39
<b>Retrieving Ownership Information for an Investment .....</b>	<b>40</b>
Overview .....	40
Exercise 20: Retrieve ownership data for a stock .....	40
A short note on using Dash Codes .....	42

# Using the Morningstar Excel Add-In

---

The Morningstar® Excel Add-In allows users to retrieve data points from the Morningstar databases within Microsoft® Excel® for further calculation, formatting, or charting. Think of it as an alternative to exporting data from Morningstar Direct<sup>SM</sup>.

This guide offers information about the Add-In and a series of exercises showing users how to leverage some of its key features. Note that this tool must be installed separately from the Morningstar Direct application.

The Morningstar Excel Add-In allows users to retrieve data from Morningstar Direct using the commands described in the following table:

Use this command...	To retrieve this type of data from the desktop version of Morningstar Direct...
MSMEMBER	Investments included as part of a saved list or search
MSDP	The current value of a data point
MSTS	Historical values for a data point, over a time period you define
MSHOLDING	The holdings of a investment's portfolio
MSDATE	Dynamic time periods

This guide includes the following lessons:

- ▶ [Installing and Configuring the Morningstar Excel Add-In \(page 5\)](#)
- ▶ [Retrieving the Members of a Saved List or Search \(page 11\)](#)
- ▶ [Retrieving Supplementary Data for Investments \(page 15\)](#)
- ▶ [Retrieving a Historical Series of Data Points for Investments \(page 20\)](#)
- ▶ [Retrieving a Portfolio's Holdings \(page 36\)](#)
- ▶ [Retrieving Ownership Information for an Investment \(page 40\)](#)

## Overview

## What basic formulas does the Morningstar Excel Add-In offer?

## Installing and Configuring the Morningstar Excel Add-In

Before using the Morningstar Excel Add-In, it must be installed. Additionally, it will be worthwhile to spend a few minutes configuring both the settings within the Add-In, as well as Microsoft® Excel itself to optimize the use of this tool.

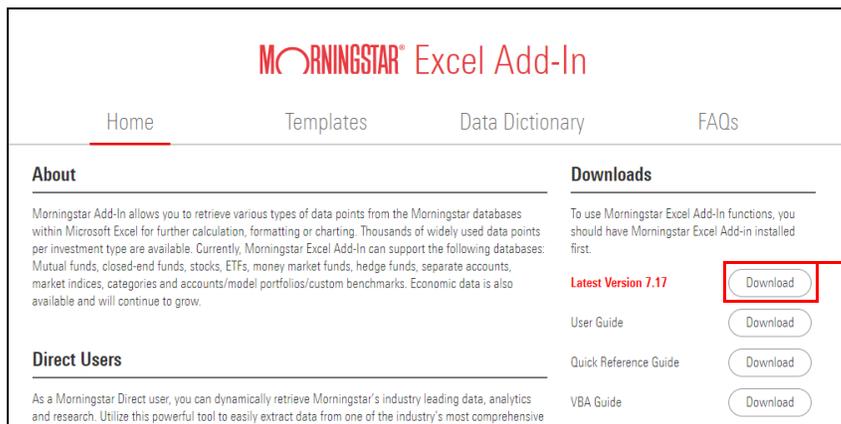
### Overview

If you do not have installation rights on your computer, work with your firm's IT department to have the Morningstar Excel Add-In installed for you. If you do have installation rights on your computer, you can install it by doing the following:

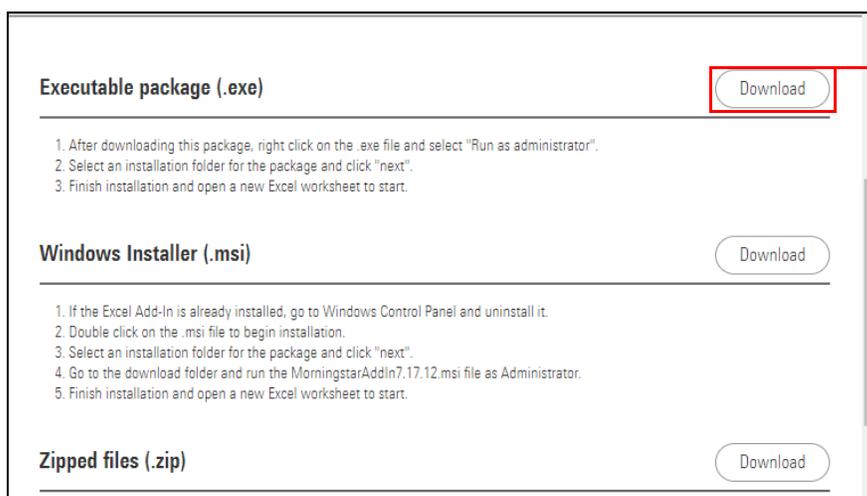
1. Visit <http://addin.morningstarcommodity.com/>.
2. To the right of the Latest Version, click **Download**.

Note: Users will need to regularly visit this page to download updated versions of the application as new features and capabilities are introduced for the Add-In.

### Exercise 1: Install the Morningstar Excel Add-In

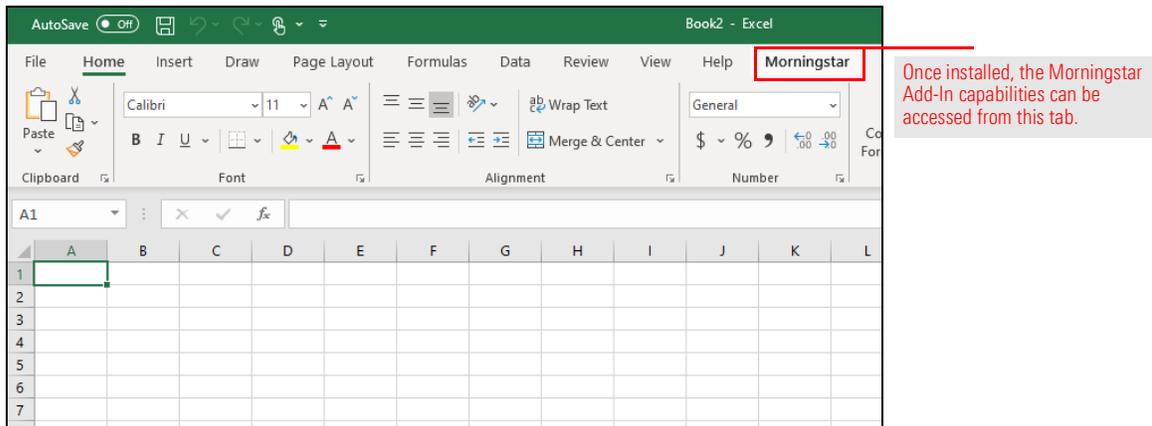


3. Under the Executable package (.exe), click **Download**.



4. **Open** the .exe file and follow the prompts to install it.

- To see that the Add-In appears as expected, **open Microsoft® Excel®**.



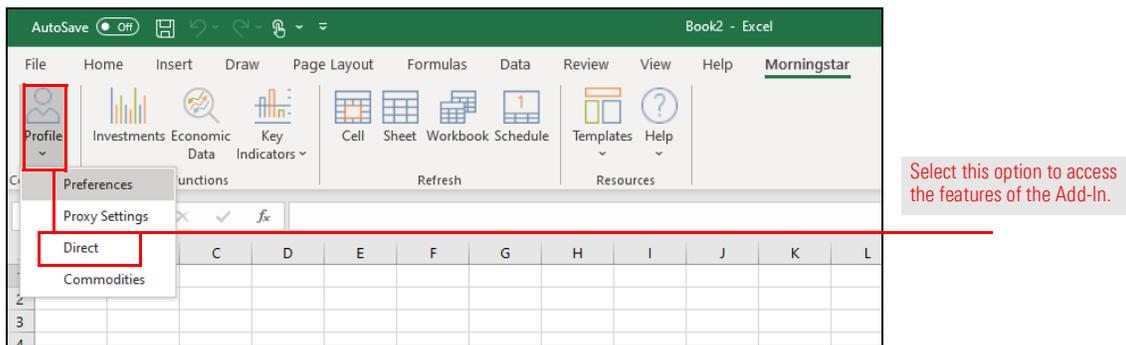
When accessing the Morningstar Excel Add-In for the first time, only the following icons are seen under the **Morningstar** tab:

**Exercise 2: Log in to the Morningstar Excel Add-In**



To use the Morningstar Excel Add-In, users must enter their Morningstar Direct login credentials. To login, do the following:

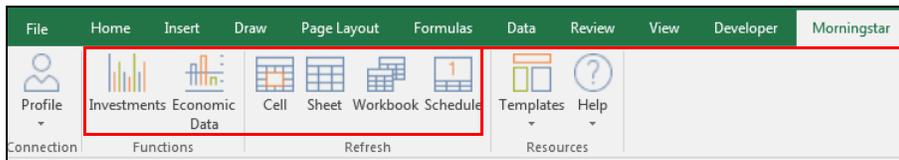
- Under the **Morningstar** tab, click **Profile > Direct**. The Morningstar Add-In login dialog box opens.



2. Enter the **e-mail address** and **password** used to access Morningstar Direct, then click **Log In**.

The login details entered here are saved, and will not be required again.

The complete Morningstar Excel Add-In toolbar is now available.



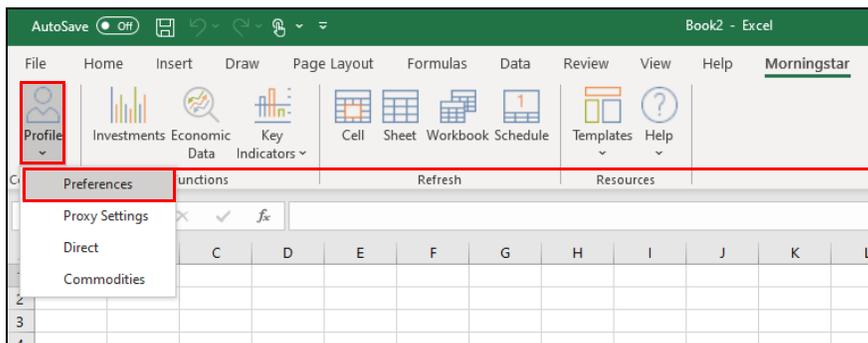
Note the additional icons now available.

The Morningstar Excel Add-In has its own settings to control the following items:

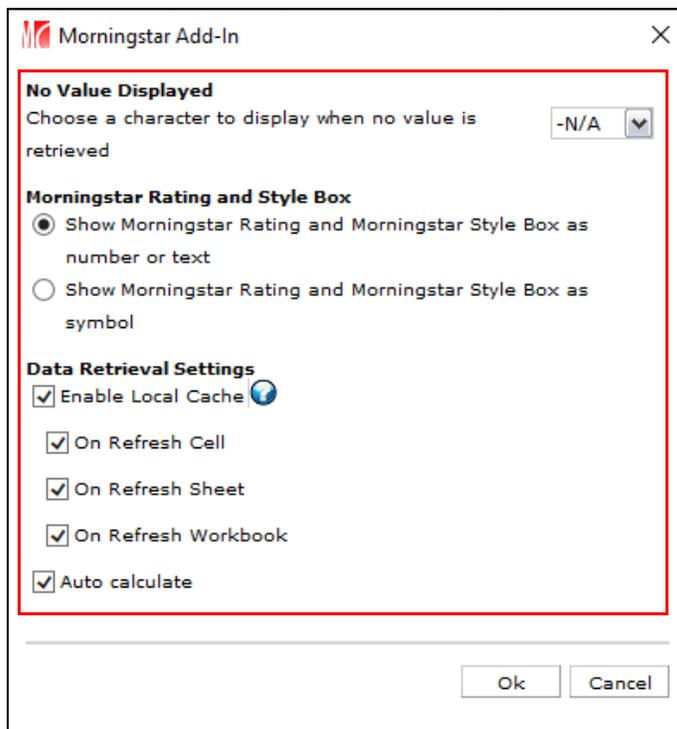
- ▶ What should be displayed when no data or value is available for an item?
- ▶ When the Morningstar Rating and Morningstar Style Box are displayed, should they appear as symbols, or numbers?
- ▶ How do you want to save data in your computer's memory when using the Morningstar Excel Add-In for the sake of optimizing performance?
- ▶ When a change is made to a formula in a worksheet, do you want the tool to automatically recalculate values, or do you want to manually control this update?

To configure these settings, do the following:

1. From the **Morningstar** tab, click **Profile > Preferences**. The Morningstar Add-In dialog box opens.



- Under **No Value Displayed**, choose one of the following options:
  - ▶ **N/A** to show N/A when data is not available
  - ▶ **Blank** to show a blank cell when data is not available, or
  - ▶ **–** to fill a cell with a dash when data is not available.
- Under the Morningstar Ratings and Style Box section, choose whether to display the data as **number or text** or as a **symbol**.
- Under the Data Retrieval Settings section, leave these settings unchanged.
  - ☞ Note: Leaving the box for Enable Local Cache checked allows for faster performance and data retrieval by saving data in your computer's local memory.
- To automatically recalculate all data when a formula is changed or added, leave the **Auto calculate** box selected. To manually control when data in the spreadsheet is updated, de-select this checkbox. Think about the impact of this option if you plan to use other fields/cells in Microsoft® Excel® with your own formulas, which would also be impacted by this setting.



Set what options you would prefer to use here.

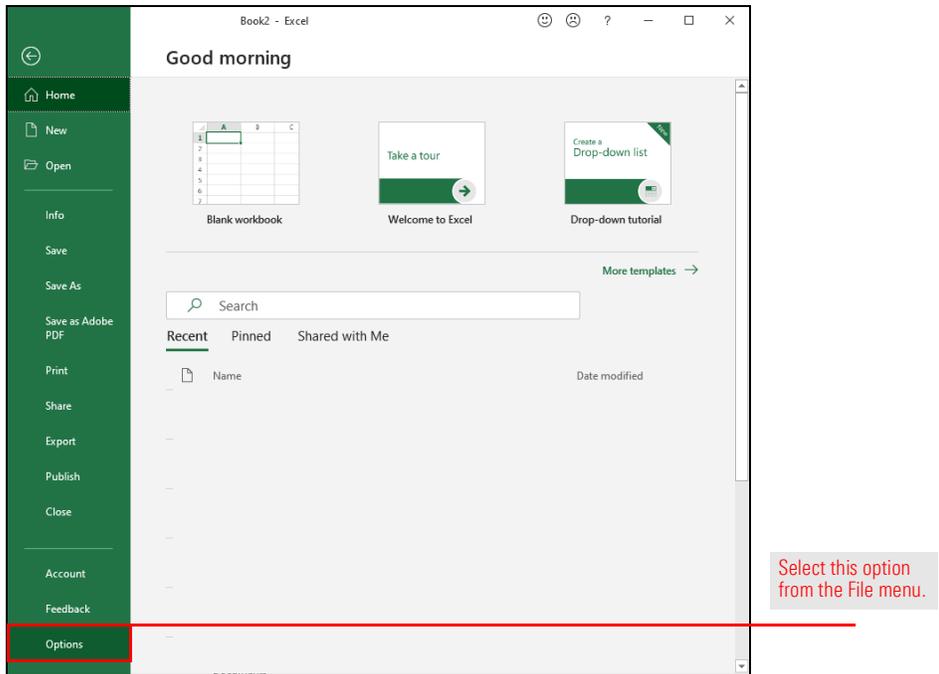
- Click **OK**.

The Morningstar Excel Add-In allows each user to retrieve 500,000 data points per day; this daily limit is reset at the end of the day. Setting the formulas you create to Manual calculation saves your data while creating your work. You can decide to switch back to Automatic calculation at a later stage from the Formula tab or by going back to File > Options > Formulas.

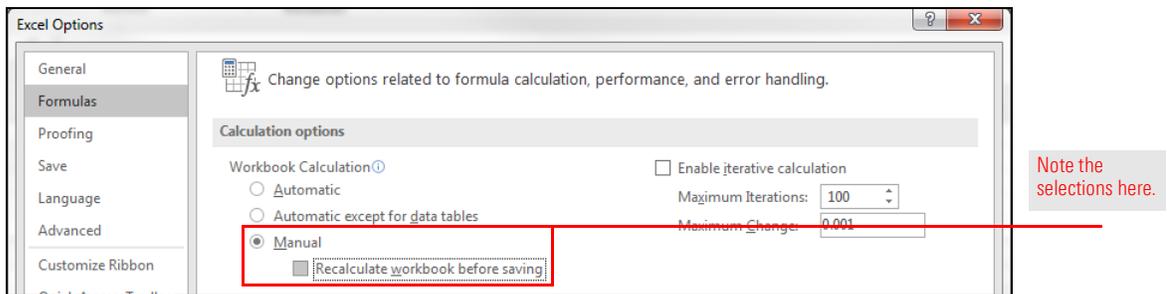
**Exercise 4: Update the settings for Microsoft® Excel®**

To avoid calculating the same data points several times while working on a template, do the following:

1. In Microsoft Excel select, **File > Options**. The Excel Options dialog box opens.



2. In the left-hand pane, click **Formulas**.
3. Under Calculation Options, select **Manual**.
4. Deselect the **Recalculate workbook before saving** checkbox.



5. Click **OK**.

## Retrieving the Members of a Saved List or Search

This section provides practice for using the MSMEMBER formula in the Morningstar Excel Add-In. This command allows users to see which investments are included as part of a saved list or search from the desktop version of Morningstar Direct. This is often the first step before using other Add-In commands to retrieve additional data points for these items.

Before retrieving data into any spreadsheet, it will help to see one set up with specific column headers, so you have some perspective on what is being added. [Download this Excel file](#) for use with these exercises, then open it.

To retrieve the holdings of the saved investment list named Multiple Investments, do the following in the Excel Add-In Template worksheet:

1. On the **Data** worksheet, select cell **A4**.
2. On the **Morningstar** tab, click **Investments**. The Morningstar Add-In window opens.

### Overview

### Exercise 5: Download the sample spreadsheet

### Exercise 6: Retrieve an existing list of investments

Click this icon to begin designing a formula for the selected cell.

SecID	Name	Morningstar Rating Overall	Morningstar Analyst Rating	Morningstar Sustainability Rating	Morningstar Category
	End date				

3. Under the Securities options, select **Identifiers**.
4. Under Layout, confirm that **Column** is selected.
5. Under Output, **deselect** the Show Headers checkbox.
6. Ensure the **Source** drop-down field has **Investment List** selected.
7. From the **List/Search name** drop-down field, select **Multiple Investments**.
8. From the **Security ID** drop-down field be sure **SecId** is selected.

The screenshot shows the Morningstar Add-In interface. On the left, a sidebar lists categories: Securities, Attributes/Time series, Holdings, Ownership, Identifiers (highlighted with a red box), Portfolio Management, Attributes/Time series, and Holdings. The main area has several sections:
 

- Layout:** Radio buttons for Row and Column (Column is selected and highlighted with a red box).
- Output:** A checkbox for Show Headers (unchecked and highlighted with a red box).
- Source:** A dropdown menu with 'Investment list' selected (highlighted with a red box).
- List/Search name:** A dropdown menu with 'Multiple Investments' selected (highlighted with a red box).
- Security ID:** A dropdown menu with 'SecId' selected (highlighted with a red box).

 Below these options is a table with columns: Security, Data Point, and Formula. The table is currently empty.

Note the highlighted selections for this formula.

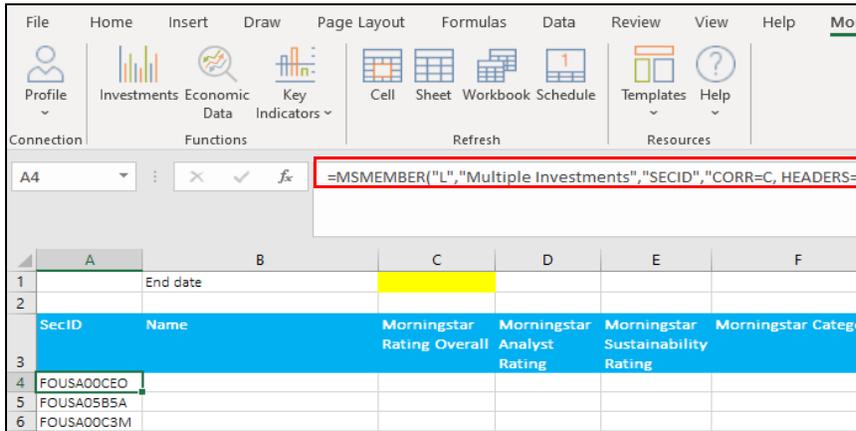
9. Click **Add**.
10. Click **Submit**.

This screenshot shows the same Morningstar Add-In interface, but now with a formula entered in the Formula column of the table. The formula is: `=MSMEMBER("L","My Selection","SECID","CORR=C, HEADERS=FALSE")`. The 'Add' button (highlighted with a red box) is located to the right of the formula field. At the bottom right of the interface, the 'Submit' button (highlighted with a red box) is visible. A red arrow points from the 'Add' button to a text box on the right.

When a formula is complete, click **Add**, then **Submit** to return to the spreadsheet.

The Add-In formula used in a given cell appears in the Formula bar at the top of the spreadsheet.

**What are the component parts of the MSMEMBER formula?**



The formula can be seen here when selecting the cell where it was designed.

In this case, the following formula is being used:

```
=MSMEMBER("L","Multiple Investments","SecId","CORR=C","HEADERS=FALSE")
```

The following table parses each part of this formula:

Note: The structure of other Morningstar Excel Add-In formulas are also similar to this one.

Item	Description
MSMEMBER	A data retrieval function used to pull members of an investment list or current results of a search criteria from the desktop version of Morningstar Direct. Note: Any list created in the web-based version of Morningstar Direct is also available in the desktop version, so those lists can also be retrieved in the Add-In.
"L"	Identifies that an Investment List is being retrieved from the desktop version of Morningstar Direct. (In contrast, "S" would identify a Search Criteria being retrieved.)
"My Selection"	The name of the list.
"SECID"	Specifies which security identifier should be displayed. Instead, ISIN or Ticker could be used.
"CORR=C"	Displays the identifiers in either a column or row. Read this as "C or R = C." In this instance, identifiers will be displayed in a column.
"HEADERS=FALSE"	Indicates that a header row has been excluded from showing.

Once the formula is understood, it can easily be modified by selecting the correct cell and making changes directly in the Formula bar. Do the following:

1. Use the mouse to place the cursor in the Formula bar.
2. Change **SECID** to **TICKER**.

The screenshot shows the Excel interface with the Formula bar open. The formula bar contains the text: `=MSMEMBER("L","Multiple Investments","TICKER",CORR=C, HEADERS=)`. The word "TICKER" is enclosed in a red rectangular box. A red horizontal line extends from the right side of this box to a grey callout box on the right side of the image. The callout box contains the text: "When replacing SECID with TICKER, be sure to preserve the quotation marks." Below the formula bar, a portion of a data table is visible. The table has columns labeled A through F. Row 2 is a header row with blue background. Row 3 contains data for SECID, Name, Morningstar Rating Overall, Morningstar Analyst Rating, Morningstar Sustainability Rating, and Morningstar Category. Rows 4, 5, and 6 contain data for FCNTX, POAGX, and DODIX respectively.

When replacing SECID with TICKER, be sure to preserve the quotation marks.

3. Press **<ENTER>**. Note the update to the content in column A.
4. Change the **column header** for Column A from SecId to **Ticker**.
5. **Save** the workbook.

## Retrieving Supplementary Data for Investments

The MSDP (Morningstar Supplementary Data Point) formula is designed to retrieve current data points such as fund name, Morningstar Category, and so on. It requires the following parameters:

- ▶ Security identifier, and
- ▶ Data attribute identifier.

To obtain the Ticker for the list of securities, do the following:

1. **Copy** cell **A4**.
2. From the **Morningstar** tab, click **Investments**. The Morningstar Add-In dialog box opens.
3. Under the Securities options, select **Attributes/Time Series**.
4. Under Layout, confirm that **Column** is selected.
5. Under Output, ensure the Show Headers checkbox is deselected.
6. In the **Security** field, **paste** the **ticker**.
7. Click the security **name** that appears.

### Overview

### Exercise 7: Retrieve supplementary data points

Name	Universe Type	Exchange	Domicile
Fidelity® Contrafund®	FO	NAS	USA

When the name of the fund appears, click it to select it.

8. Under Data Point, type **Name**.
9. Click the **data point** to select it.

Click the name of a data point to select it.

Full Name	Short Name
Name	Name
Analyst Name	Analyst_Name
Branding Name	Branding_Name
Branding Name ID	Branding_Name_ID
Certification Name	Certification_Name
EMT Producer Name	EMT_Producer_Name
Firm Name	Firm_Name

10. Click **Add**. The resulting formula appears within the dialog box.
11. Click **Submit**. The security's name now displays in the Excel table in cell B4.

After clicking Add, two data points should now appear here.

Security	Data Point	Formula
Multiple Investments	TICKER	=MSMEMBER("Multiple Investments","TICKER";CORR=C;HEADERS=FALSE)
NASFCNTX	ISIN	=MSDP("NASFCNTX";"ISIN";CORR=C;HEADERS=FALSE)

The same formula (in cell B4) should apply to all rows in that column, but before copying the formula down it will be useful to modify it to ensure the formula copied serves as a general reference for any security and data point referenced in the formula.

### Exercise 8: Apply a formula to additional investments

To make these changes, do the following:

1. Select cell **B4**.
2. In the **Formula** bar, replace "**NAS:FCNTX**" with **\$A4** to reference the cell containing the security's ticker.  
 ☞ Note: Whenever a cell reference is used in a formula, be sure to remove the quotation marks.
3. To reference the discrete data point name in the header, replace "**Name**" with **B\$3**, then press **<ENTER>**.

	A	B	C	D	E	F
1		End date				
2						
3	Ticker	Name	Morningstar Rating Overall	Morningstar Analyst Rating	Morningstar Sustainability Rating	Morningstar Category
4	FCNTX	Fidelity® Contrafund®				
5	POAGX					
6	DODIX					
7	MSSFY					
8	MWTRX					
9	VFINX					
10	OARMX					
11	CSB					
12	FCPVX					

Note that a cell reference does not take quotation marks.

4. **Drag** the formula down to the last row the column. Each security's corresponding ISIN displays in the table.

- If you are using Automatic calculation mode, the data points automatically refresh. If you are using Manual calculation mode, select the cells to be calculated and click **Cell** from the **Morningstar** tab.

The screenshot shows the Microsoft Excel interface with the Morningstar ribbon selected. The 'Formulas' group on the ribbon has the 'Cell' button highlighted with a red box. A callout box points to this button with the text: "If the spreadsheet needs to be manually recalculated, click here." Below the ribbon, the formula bar shows the formula: `=MSDP($A4,B$3,"CORR=C, HEADERS=FALSE")`. The spreadsheet grid below shows a table with columns for Ticker, Name, Morningstar Rating Overall, Morningstar Analyst Rating, Morningstar Sustainability Rating, Morningstar Category, and Primary Prospect Benchmark. The data rows list various Fidelity Contrafund investments.

	A	B	C	D	E	F	G
1		End date					
2							
3							
4	FCNTX	Fidelity® Contrafund®					
5	POAGX	Fidelity® Contrafund®					
6	DODIX	Fidelity® Contrafund®					
7	MSSFY	Fidelity® Contrafund®					
8	MWTRX	Fidelity® Contrafund®					
9	VFIND	Fidelity® Contrafund®					
10	OARMX	Fidelity® Contrafund®					
11	CSB	Fidelity® Contrafund®					
12	FCPVX	Fidelity® Contrafund®					
13	FRVLX	Fidelity® Contrafund®					
14	JSIVX	Fidelity® Contrafund®					
15	NDVIX	Fidelity® Contrafund®					
16	ANSIX	Fidelity® Contrafund®					
17	QUSVX	Fidelity® Contrafund®					
18	UBVLX	Fidelity® Contrafund®					
19	VSSVX	Fidelity® Contrafund®					
20	VISVX	Fidelity® Contrafund®					
21	GOGFX	Fidelity® Contrafund®					
22	ESPAX	Fidelity® Contrafund®					

- Save the workbook.

Per the column headers on the worksheet, the following discrete data points should also be retrieved:

- ▶ Name
- ▶ Morningstar Rating Overall
- ▶ Morningstar Analyst Rating
- ▶ Morningstar Sustainability Rating
- ▶ Morningstar Category
- ▶ MPT Benchmark, and
- ▶ MPT Benchmark ID.

**Exercise 9: Retrieve multiple data points at once**

Using these discrete data point names, the same formula from the previous exercise can easily be used to populate the values for all discrete data point columns at once.

To retrieve values for multiple data points at once, do the following:

1. Select cell **B4**.
2. **Click-and-drag** the formula to the right to select the cell in the first row under the **MPT Benchmark ID** column.

1	A	B	C	D	E	F	G	H	I
2		End date							
3	Ticker	Name	Morningstar Rating Overall	Morningstar Analyst Rating	Morningstar Sustainability Rating	Morningstar Category	Primary Prospectus Benchmark	Primary Prospectus Benchmark ID	1 Year
4	FCNTX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
5	POAGX	PRIMECAP Odyssey Aggressive Growth							
6	DODIX	Dodge & Cox Income							
7	MISFX	Litman Gregory Masters Smir Coms Instl							
8	MWTRX	Metropolitan West Total Return Bd M							
9	VFINX	Vanguard 500 Index Investor							
10	OARMX	Oakmark Service							
11	CSB	VictoryShares US SmCap Hi Div Vol Wtd ETF							
12	FCPVX	Fidelity® Small Cap Value							
13	FRVLX	Franklin Small Cap Value A							
14	JSIVX	Janus Henderson Small Cap Value L							
15	NDVIX	MFS New Discovery Value I							
16	ANSIX	Ancora Special Opportunity I							
17	QUSVX	Quaker Small/Mid-Cap Impact Val Advisor							
18	UBVLX	Undiscovered Managers Behavioral Val L							
19	VSSVX	VALUC Company Small Cap Special Val							
20	VISVX	Vanguard Small Cap Value Index Inv							
21	GOGFX	Victory Sycamore Small Company Opp R							
22	ESPAX	Wells Fargo Special Small Cap Value A							
23									

Be sure to drag the formula from cell B4 all the way to H4.

3. **Click-and-drag** the formula down to the last row.

1	A	B	C	D	E	F	G	H	I
2		End date							
3	Ticker	Name	Morningstar Rating Overall	Morningstar Analyst Rating	Morningstar Sustainability Rating	Morningstar Category	Primary Prospectus Benchmark	Primary Prospectus Benchmark ID	1 Year
4	FCNTX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
5	POAGX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
6	DODIX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
7	MISFX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
8	MWTRX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
9	VFINX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
10	OARMX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
11	CSB	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
12	FCPVX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
13	FRVLX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
14	JSIVX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
15	NDVIX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
16	ANSIX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
17	QUSVX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
18	UBVLX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
19	VSSVX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
20	VISVX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
21	GOGFX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
22	ESPAX	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	Fidelity® ContraFund®	
23									

Drag the formula down to this cell.

4. If you are in Automatic calculation mode, the data points will refresh. If you are in Manual calculation mode, click **Cell** from the Morningstar tab.
5. **Save** the workbook.

## Retrieving a Historical Series of Data Points for Investments

The MSTS (Morningstar Time Series) formula is designed to retrieve such data points as historical prices for stocks, NAVs for mutual funds, historical calendar period returns for securities, or historical portfolio data. Pulling in time series data requires the following parameters in a formula:

- ▶ Security identifier
- ▶ Data attribute identifier
- ▶ Start date, and
- ▶ End date.

Note: When using custom calculations, other parameters are required, such as currency, benchmark, source, and so on.

### Overview

To retrieve performance over trailing time periods, do the following:

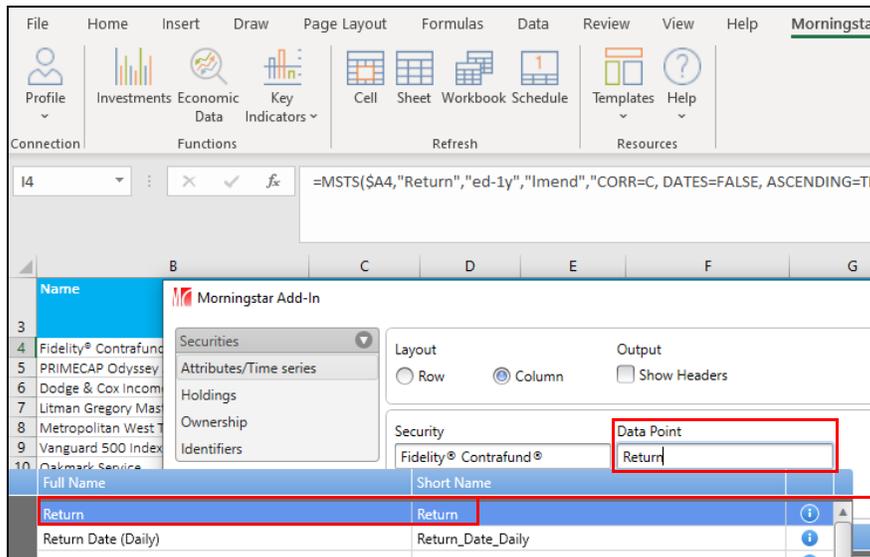
1. Copy cell **A4**.
2. Select cell **I4**.
3. From the **Morningstar** tab, click **Investments**. The Morningstar Add-In window opens.

### Exercise 10: Retrieve time series data points

Ticker	Name	Morningstar Rating Overall	Morningstar Analyst Rating	Morningstar Sustainability Rating	Morningstar Category	Primary Prospectus	Primary Prospectus Benchmark	Return
								1 Year 3 Years 5
FCNTX	Fidelity® Contrafund®	★★★★	Silver	Average	US Fund Large Growth	S&P 500 TR USD	XIUSA04G92	
POAGX	PRIMECAP Odyssey Aggressive Growth	★★★★	Gold	Average	US Fund Mid-Cap Growth	S&P 500 TR USD	XIUSA04G92	
DODIX	Dodge & Cox Income	★★★★	Gold	-	US Fund Intermediate Cor	BbgBenc US Agg Bon	XIUSA000MC	
INSSFX	Litman Gregory Masters Smir Coms Instl	★★	-	Average	US Fund Small Blend	Russell 2000 TR USE	XIUSA000OS	
MWTRX	Metropolitan West Total Return Bd M	★★★★	Silver	-	US Fund Intermediate Cor	BbgBenc US Agg Bon	XIUSA000MC	
VFINX	Vanguard 500 Index Investor	★★★★	Gold	Average	US Fund Large Blend	S&P 500 TR USD	XIUSA04G92	
OARMX	Oakmark Service	★★	Gold	Below Average	US Fund Large Blend	S&P 500 TR USD	XIUSA04G92	
ICCB	Victor Chang US Sm Cap V. Div. Intl. Hbrd FFF	★★★★	-	Average	US Fund Small Value	NASDAQ US Agg	FO0000U0F01	

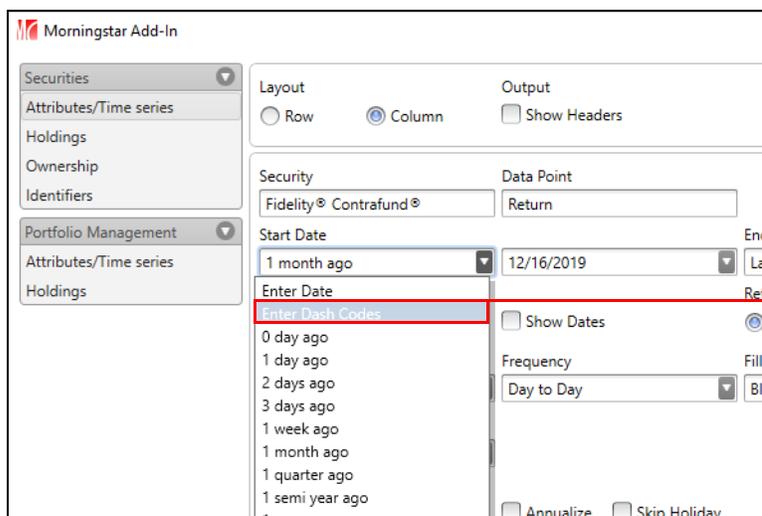
Be sure this cell is selected before clicking the Investments icon.

4. Under the Securities options, be sure **Attributes/Time Series** is selected.
5. Under Layout, confirm that **Column** is selected.
6. Under Output, ensure the Show Headers checkbox is deselected.
7. In the **Security** field, **paste** the **ticker**, then select the **security** that appears.
8. In the **Data Point** field, type **Return** and select the first choice in the list.



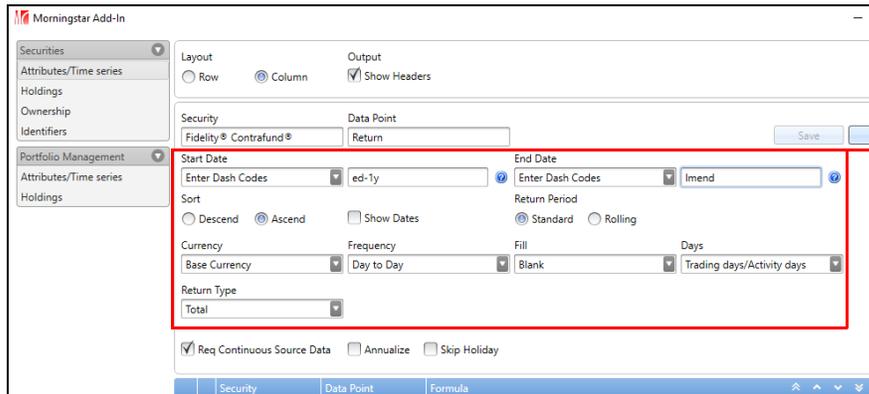
Be sure to select this data point.

9. To set dynamic dates for the last year from the latest month end, from the **Start Date** drop-down field select **Enter Dash Codes**.

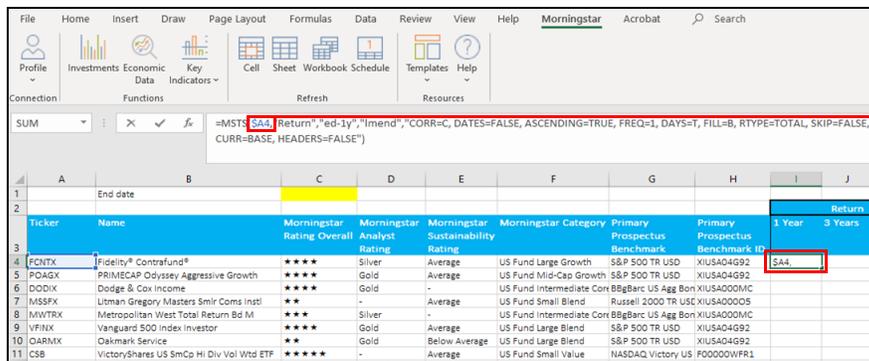


Select this option from the Start Date drop-down field.

10. In the field to the right, type **ed-1y** (end date – 1 year).
11. From the **End Date** drop-down field, select **Enter Dash Codes**.
12. In the field to the right, type **Imend** (latest month end).
  - ☞ Note: For more information on using dash codes, see [A short note on using Dash Codes on page 42](#).
13. From the **Return Type** drop-down field, be sure **Total** is selected.



14. Click **Add**, then click **Submit**.
15. Select cell **I4**.
16. As before, in the **Formula** bar, replace the ticker symbol (including the quotation marks) with **\$A4**, then press **<ENTER>**.



17. **Click-and-drag** the formula down the list to apply the formula to all securities.
18. If needed, click **Cell** to calculate the values.

Now that the 1-year return column is set, how can the other return columns be easily updated? To manually modify a formula via the Formula bar, do the following:

### Exercise 11: Manually modify a formula

1. **Copy** cell **I4**.
2. **Paste** the value in cell **J4**. (The first row under the 3-year return column.)
  - Note: Rather than copying and pasting, you can instead select the cell J4 and simply drag it to cell K4. If so, be sure only cell K4 is selected before proceeding.
3. In the Formula bar, change **ed-1y** to **ed-3y** (that is, end date – 3 years).
4. To ensure the return value is annualized (and not cumulative), change **ANN=FALSE** to **ANN=TRUE**.

	C	D	E	F	G	H	I	J	K	L
1										
2										
3	Morningstar Rating Overall	Morningstar Analyst	Morningstar Sustainability	Morningstar Category	Primary Prospectus Benchmark	Primary Prospectus Benchmark ID	1 Year	3 Years	5 years	Std Dev
4	★★★★	Silver	Average	US Fund Large Growth	S&P 500 TR USD	XIUSA04G92	29.98	ANN=TRUE		
5	★★★★	Gold	Average	US Fund Mid-Cap Growth	S&P 500 TR USD	XIUSA04G92	23.50			
6	★★★★	Gold	-	US Fund Intermediate Core	BBgBarc US Agg Bon	XIUSA000MC	9.75			
7	★★	-	Average	US Fund Small Blend	Russell 2000 TR USD	XIUSA000O5	23.72			
8	★★★★	Silver	-	US Fund Intermediate Core	BBgBarc US Agg Bon	XIUSA000MC	8.94			
9	★★★★	Gold	Average	US Fund Large Blend	S&P 500 TR USD	XIUSA04G92	31.33			

Change the values of the two highlighted parts of the formula.

5. Press **<ENTER>**.
6. Drag the formula down the list to apply to all securities.
7. If necessary, click **Cell** to recalculate the values.
8. Repeat steps 1-7 to set up the **5-year return** (change ed-1y to **ed-5y** here) under column K.
9. **Save** the workbook.

The next step is to retrieve data for the three risk statistics. The first of these is standard deviation, but all three will be added at once in the Morningstar Add-In window (via subsequent exercises). Note that while all three risk statistics are for the trailing three-year period, the following exercises do not call for the use of the data points specific to that time period (for example, Std Dev 3-Yr (Mo-End)).

### Exercise 12: Retrieve standard deviation values

Instead, the generic versions of standard deviation, tracking error, and Sharpe ratio will be used. This allows users to set flexible start and end dates for the data points, which will be automatically updated when the workbook is refreshed. Do the following:

1. **Copy** cell **A4**.
2. Select cell **L4**.
3. From the **Morningstar** tab, click **Investments**. The Morningstar Add-In window opens.

Name	Morningstar Rating Overall	Morningstar Analyst Rating	Morningstar Sustainability Rating	Morningstar Category	Primary Prospectus Benchmark	Primary Prospectus Benchmark ID	1 Year	3 Years	5 years	Std Dev	Tracking Error
Fidelity® Contrafund®	★★★★	Silver	Average	US Fund Large Growth	S&P 500 TR USD	XIUSA04G92	29.98	18.94	18.1		
PRIMECAP Odyssey Aggressive Growth	★★★★	Gold	Average	US Fund Mid-Cap Growth	S&P 500 TR USD	XIUSA04G92	23.50	15.38	12.4		
Dodge & Cox Income	★★★★	Gold	-	US Fund Intermediate Con	BBgBarc US Agg Bon	XIUSA000MC	9.75	4.53	3.70		
Litman Gregory Masters Smllr Coms Instl	★★★	-	Average	US Fund Small Blend	Russell 2000 TR USD	XIUSA000DS	23.72	9.21	5.49		
Metropolitan West Total Return Bd M	★★★	Silver	-	US Fund Intermediate Con	BBgBarc US Agg Bon	XIUSA000MC	8.94	3.93	2.80		
Vanguard 500 Index Investor	★★★★	Gold	Average	US Fund Large Blend	S&P 500 TR USD	XIUSA04G92	31.33	15.13	11.55		
Chelmeck Service	★★	Gold	Below Average	US Fund Large Blend	S&P 500 TR USD	XIUSA04G92	26.65	10.03	8.51		

Be sure this cell is selected before clicking the Investments icon.

4. Under the Securities options, be sure **Attributes/Time Series** is selected.
5. Under Layout, confirm that **Column** is selected.
6. Under Output, ensure the Show Headers checkbox is deselected.
7. In the **Security** field, **paste** the **ticker**, then select the **security** that appears.
8. In the **Data Point** field, type **std dev** and select **Std Dev** from the list of results. Additional fields are now available in the Settings section.

Full Name	Short Name
Residual Std Dev (non-excess return)	Residual_Std_Dev_non_excess_ret
Semi Std Dev	Semi_Std_Dev
<b>Std Dev</b>	<b>Std_Dev</b>
Std Dev 1 Yr (Mo-End)	Std_Dev_1Yr_ME
Std Dev 1 Yr (Qtr-End)	Std_Dev_1Yr_QE
Std Dev 1 Yr (Restated Load-Adj Ret)(Mo-End)	Std_Dev_1 Yr Restated Load-Adj Ret Mo-End

Be sure to select this data point.

9. To set dynamic dates for the last year from the latest month end, from the **Start Date** drop-down field select **Enter Dash Codes**.
10. In the field to the right, type **ed-3y** (end date – 3 years).
11. From the **End Date** drop-down field, select **Enter Dash Codes**.
12. In the field to the right, type **lmonth** (latest month end).
13. In the bottom-right corner of the dialog box, select the **Annualize** checkbox.

The screenshot shows the Morningstar Add-in dialog box. The 'Start Date' field is set to 'Enter Dash Codes' with 'ed-3y' entered. The 'End Date' field is set to 'Enter Dash Codes' with 'lmonth' entered. The 'Annualize' checkbox is checked. A red box highlights the Start Date and End Date fields.

Note the selections and values for these fields.

14. Click **Add**. Do not yet click Submit; the other two risk statistics will be added before returning to the worksheet.

To add the 3-year tracking error data point to the Morningstar Add-In window, do the following:

### Exercise 13: Add the tracking error

1. In the Morningstar Add-In window, click the **Standard Deviation formula**. The fields for the formula appear in the window.

The screenshot shows the Morningstar Add-In window with the following settings:

- Layout:** Column, Show Headers (unchecked)
- Security:** Fidelity® Contrafund®
- Data Point:** Std Dev
- Start Date:** Enter Dash Codes: ed-3y
- End Date:** Enter Dash Codes: 1mend
- Sort:** Ascend, Show Dates (unchecked)
- Currency:** Base Currency
- Rolling Window:** months
- Window Shift:** months
- Req Continuous Source Data:** (checked)
- Annualize:** #days in annualized years
- Source Data:** Monthly Return
- Compounding Method:** Standard
- Benchmark:**
- Risk-Free Proxy:**

The formula bar at the bottom shows: `=MSTC("NAS:FCNTX";"Std Dev";"ed-3y";"1mend";"CORR=C; DATES=FALSE; ASCENDING=TR...`

Click this formula to see its content populate in the fields within the window; be careful not to click the red X to the left of the row.

2. In the **Data Point** field, replace **Std Dev** with **Tracking Error**.

The screenshot shows the Morningstar Add-In window with the following settings:

- Layout:** Column, Show Headers (unchecked)
- Security:** Fidelity® Contrafund®
- Data Point:** Track

The Data Point dropdown menu is open, showing a list of options:

Full Name	Short Name
Tracking Error	Tracking_Error
Tracking Error 1 Yr (Restated Load-Adj Ret)(Mo-End)	Tracking_Error_1_Yr_Restated_Load-Adj_Ret_Mo-End
Tracking Error 1 Yr (Restated Load-Adj Ret)(Qtr-End)	Tracking_Error_1_Yr_Restated_Load-Adj_Ret_Qtr-End
Tracking Error 10 Yr (Restated Load-Adj Ret)(Mo-End)	Tracking_Error_10_Yr_Restated_Load-Adj_Ret_Mo-End
Tracking Error 10 Yr (Restated Load-Adj Ret)(Qtr-End)	Tracking_Error_10_Yr_Restated_Load-Adj_Ret_Qtr-End
Tracking Error 10 Yr (Mo-End)	Tracking_Error_10Yr_ME
Tracking Error 10 Yr (Qtr-End)	Tracking_Error_10Yr_QE
Tracking Error 15 Yr (Restated Load-Adj Ret)(Mo-End)	Tracking_Error_15_Yr_Restated_Load-Adj_Ret_Mo-End
Tracking Error 15 Yr (Restated Load-Adj Ret)(Qtr-End)	Tracking_Error_15_Yr_Restated_Load-Adj_Ret_Qtr-End
Tracking Error 15 Yr (Mo-End)	Tracking_Error_15Yr_ME
Tracking Error 15 Yr (Qtr-End)	Tracking_Error_15Yr_QE
Tracking Error 1 Yr (Mo-End)	Tracking_Error_1Yr_ME
Tracking Error 1 Yr (Qtr-End)	Tracking_Error_1Yr_QE
Tracking Error 20 Yr (Restated Load-Adj Ret)(Mo-End)	Tracking_Error_20_Yr_Restated_Load-Adj_Ret_Mo-End

Be sure to select this data point.

3. To set dynamic dates for the last year from the latest month end, from the **Start Date** drop-down field select **Enter Dash Codes**.
4. In the field to the right, type **ed-3y** (end date – 3 years).
5. From the **End Date** drop-down field, select **Enter Dash Codes**.
6. In the field to the right, type **Imend** (latest month end).
7. In the bottom-right corner of the dialog box, select the **Annualize** checkbox.
8. In the Benchmark field, type **S&P 500 TR USD**, then select that index.

Note: In [Exercise 15 on page 30](#), you will see how to change the reference for this data point's calculation.

The screenshot shows the 'Morningstar Add-In' dialog box. The 'Security' field is 'Fidelity® Contrafund®' and the 'Data Point' is 'Tracking Error'. The 'Start Date' is 'Enter Dash Codes' with 'ed-3y' entered, and the 'End Date' is 'Enter Dash Codes' with 'Imend' entered. The 'Annualize' checkbox is checked. The 'Benchmark' field is 'S&P 500 TR USD' and is highlighted with a red box. A red arrow points from a text box to this field.

Security	Name	Universe Type	Exchange	Domicile
XIUSA04G92:XI	S&P 500 TR USD	XI		USA
F00000W757:XI	S&P 500 TR USD(1936)	XI		USA
F00000X858:XI	S&P 500 0-3 Y HY Corp Bd TR USD	XI		USA
F00000X854:XI	S&P 500 0-3 Y IG Corp Bd TR USD	XI		USA
F00000X857:XI	S&P 500 10+ Y HY Corp Bd TR USD	XI		USA
F00000X858:XI	S&P 500 10+ Y IG Corp Bd TR USD	XI		USA
F00000MUD3:XI	S&P 500 2x Inverse Daily TR USD	XI		USA
F00000X85V:XI	S&P 500 3+ Y Bd TR USD	XI		USA
F00000X85E:XI	S&P 500 3-5 Y HY Corp Bd TR USD	XI		USA
F00000X856:XI	S&P 500 3-5 Y IG Corp Bd TR USD	XI		USA
F00000X85D:XI	S&P 500 5-7 Y HY Corp Bd TR USD	XI		USA
F00000X855:XI	S&P 500 5-7 Y IG Corp Bd TR USD	XI		USA
F00000X85G:XI	S&P 500 7-10 Y HY Corp Bd TR USD	XI		USA

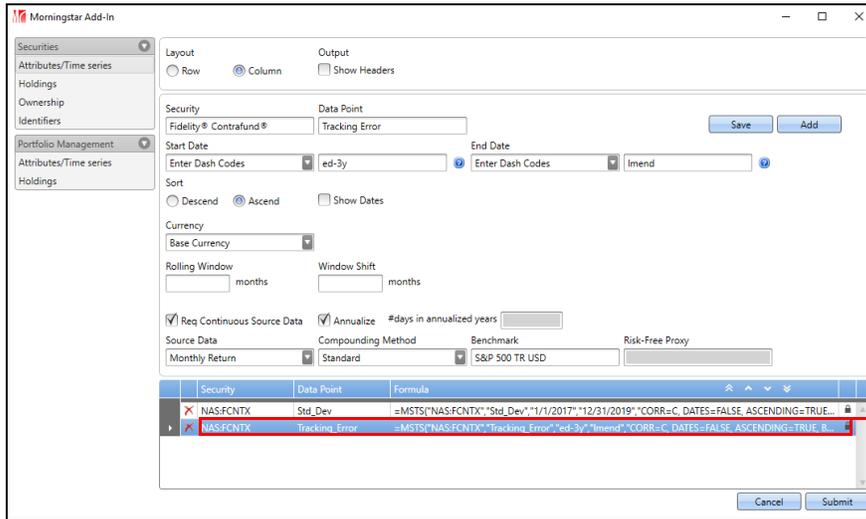
Select this particular index; it will be swapped out in a later exercise.

9. Click **Add**. Do not yet click Submit; Sharpe ratio will be added before returning to the worksheet.

To add the 3-year Sharpe Ratio, do the following:

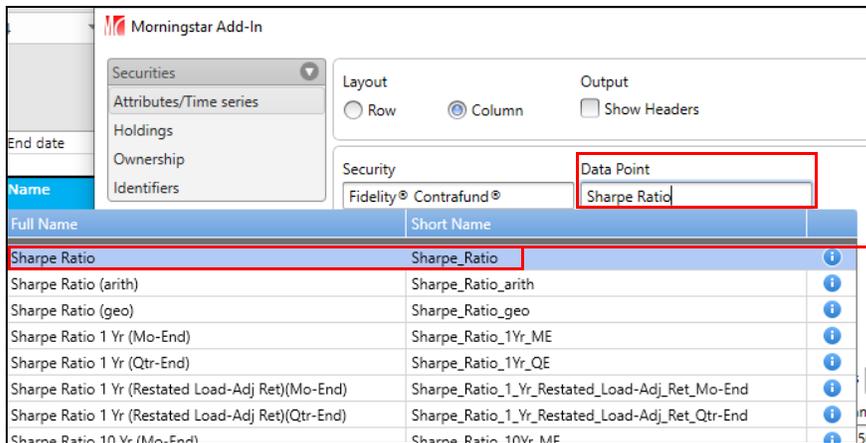
**Exercise 14: Add the Sharpe Ratio**

1. In the Morningstar Add-In window, click the **tracking error formula**.



Click this formula to see its content populate in the fields within the window; be careful not to click the red X to the left of the row.

2. In the **Data Point** field, replace **Tracking Error** with **Sharpe Ratio**.



Be sure to select this data point.

3. To set dynamic dates for the last year from the latest month end, from the **Start Date** drop-down field select **Enter Dash Codes**.
4. In the field to the right, type **ed-3y** (end date – 3 years).
5. From the **End Date** drop-down field, select **Enter Dash Codes**.
6. In the field to the right, type **Imend** (latest month end).
7. In the bottom-right corner of the dialog box, select the **Annualize** checkbox.
8. In the **Risk-Free Proxy** field, type **USTREAS T-bill Auction Ave 3 Mon**, then select that option.

The screenshot shows the 'Morningstar Add-In' dialog box. The 'Security' field is set to 'Fidelity® Contrafund®' and the 'Data Point' is 'Sharpe Ratio'. The 'Start Date' is 'ed-3y' and the 'End Date' is 'Imend'. The 'Annualize' checkbox is checked. The 'Risk-Free Proxy' field is highlighted with a red box, and a callout points to the selected option 'USTREAS T-bill Auction Ave 3 Mon' in the dropdown menu.

Security	Name	Universe Type	Exchange	Domicile
XIUSA0000C:XI	USTREAS T-Bill Auction Ave 3 Mon	FI		USA

Select this proxy.

9. Click **Add**, then click **Submit**.

The three risk statistics now have a value for the first row, but the following important steps still need to be taken:

1. The formulas need to be modified to point to a reference cell.
2. The formulas need to be copied to all rows in a column.
3. The Tracking Error formula needs to be changed so it looks to the Primary Prospectus Benchmark ID cell for each row's calculation, rather than simply using the S&P 500 for all investments.

### Exercise 15: Link formulas to a reference cell

The first two items should be familiar from previous exercises. To address the last item, this exercise shows users how to insert a reference within a part of a formula with multiple parameters contained within the same set of quotation marks. Specifically, quotation marks and ampersands (&) are used to offset the column and row designation to effect this change within a formula.

To make these three changes, do the following:

1. Select cell **L4**.
2. In the **Formula bar**, change "**NAS:FCNTX**" to **\$A4**, then press **<ENTER>**.
3. **Click-and-drag** the formula down the list to apply them to all rows in column L.
4. If necessary, click **Cell** to recalculate the values.
5. Select cell **M4**.
6. In the **Formula bar**, change "**NAS:FCNTX**" to **\$A4**, then press **<ENTER>**.
7. In the **Formula bar**, do the following:
  - A. Change "**NAS:FCNTX**" to **\$A4**
  - B. Change **BENCHMARK=XIUSA04G92** to **BENCHMARK="&H4&"**
  - C. Press **<ENTER>**.

Note the two parts of the formula to change, and how to change them.

```
=MST($A4,"Tracking_Error","ed-3y","Imend","CORR=C, DATES=FALSE, ASCENDING=TRUE BENCHMARK="&H4&"XI, COMP=S, SOURCE=HP010, ANN=TRUE, CONTI=TRUE, CURR=BASE, HEADERS=FALSE")
```

8. **Click-and-drag** the formula down the list to apply them to all rows in column M.
9. If necessary, click **Cell** to recalculate the values.
10. Select cell **N4**.
11. **Click-and-drag** the formula down the list to apply them to all rows in column N.
12. If necessary, click **Cell** to recalculate the values.
13. **Save** the workbook.

The MSTs formula also allows users to extract a historical series of data, such as historical prices, returns, Morningstar Ratings, and so on. To extract the historical returns for the list of funds, do the following:

### Exercise 16: Retrieve Historical Series data

1. Select the **Returns** tab.
2. Select cell **B2**, then click **Investments** from the Morningstar tab.

The screenshot displays the Morningstar software interface. The top ribbon includes tabs for File, Home, Insert, Draw, Page Layout, Formulas, Data, Review, and View. The 'Data' tab is active, and the 'Returns' sub-tab is selected. The 'Investments' icon in the 'Data' group is highlighted with a red box. The main workspace shows a grid with columns A, B, and C, and rows 1 through 21. Cell B2 is selected and highlighted with a red box. A red line connects this box to a callout box on the right that says 'Select this cell, then click Investments.' Another red line connects the 'Returns' tab at the bottom to a callout box that says 'Be sure this worksheet is selected.'

3. Click **Identifiers**.
4. Under Layout, select **Row**.
5. Under Output, deselect the **Show Headers** checkbox.
6. From the **Source** drop-down field, be sure **Investment Lists** is selected.
7. From the **List/Search name** drop-down field, select **Multiple Investments**.

8. Under **Settings > Security ID**, select **Ticker**.

Morningstar Add-In

Securities

- Attributes/Time series
- Holdings
- Ownership
- Identifiers**

Portfolio Management

- Attributes/Time series
- Holdings

Layout:  Row  Column  Show Headers

Output:  Show Headers

Source: Investment list

List/Search name: Multiple Investments

Security ID: Ticker

Security	Data Point	Formula

Be sure to mirror the selections shown here.

9. Click **Add**, then **Submit**. The tickers for the members of the list appear in a row.
10. To add the name underneath each fund, do the following:
- Select cell **B3**.
  - In the cell, type **=MSDP(B3,"Name")**, then press **<ENTER>**.
  - Click-and-drag** this formula to the last cell in the row to the right.
  - If needed, click **Cell** to recalculate.

File Home Insert Draw Page Layout Formulas Data

Profile Investments Economic Data Key Indicators

Cell Sheet Workbook Schedule

Connection Functions Refresh

B3: **=MSDP(B2, "Name")**

	A	B	C
1			
2	<b>Ticker</b>	FCNTX	POAGX
3	<b>Name</b>	Fidelity® Contrafund®	PRIMECAP Odyssey Aggressive G Doc

Type the formula directly into the cell (or Formula bar).

11. To see daily returns for the first investment over the past year, start by **copying** the ticker in cell **B2**.
12. Select cell **A4**, then click **Investments**.

Select this cell before clicking Investments.

	A	B	C	D
1				
2	Ticker	FCNTX	POAGX	DODIX
3	Name	Fidelity® Contrafund®	PRIMECAP Odyssey Aggressive Growth	Dodge & Cox Incom
4				
5				
6				

13. **Attributes/Time Series** should be selected, as should the option for **Column**. The checkbox for Show Headers should be deselected.
14. **Paste** the ticker into the **Security** field, then click the security name when it appears to select it.
15. In the **Data Point** field, type **Return** then select that data point.

Select this data point.

Full Name	Short Name	
Return	Return	i
Return Date (Daily)	Return_Date_Daily	i
Return Date (Mo-End)	Return_Date_ME	i
Return Date (Qtr-End)	Return_Date_QE	i
Return on Assets TTM	Return_on_Assets_TTM	i
Return on Equity TTM	Return_on_Equity_TTM	i
Return Profile - Growth	Return_Profile_Growth	i
Return Profile - Hedging	Return_Profile_Hedging	i

16. Start by using the **Frequency** field to select **Daily**.
17. From the **Start Date** field, select **Enter Dash Codes** and type **ed-1y**.
18. From the **End Date** field, select **Enter Dash Codes** and type **Imend**.
19. Select **Show Dates**.

Morningstar Add-In

Layout:  Row  Column Output:  Show Headers

Security: Fidelity® Contrafund® Data Point: Return

Start Date: Enter Dash Codes ed-1y End Date: Enter Dash Codes Imend

Sort:  Descend  Ascend  Show Dates Return Period:  Standard  Rolling

Base Currency: USD Frequency: Daily Fill: Blank Days: Trading days/Activity days

Return Type: Total

Annualize

Buttons: Save Add

Bottom Bar: Security Data Point Formula

20. Click **Add**, then click **Submit**.
21. Cell A4 should be selected. In the Formula bar, replace the ticker with **\$B2**.

	A	B	
1			
2	Ticker	FCNTX	POAGX
3	Name	Fidelity® Contrafund®	PRIMECAP Odyssey Aggressive Growth
4	1/2/2019	0.18	
5	1/3/2019	-2.81	
6	1/4/2019	3.92	

Formula Bar: =MST(\$B2,"Return","ed-1y","Imend","C

Replace the ticker with this reference link.

22. To modify and apply the same formula to the second fund, do the following:
- Copy** cell A4.
  - Paste** the value in cell C4.
  - In the formula bar, change **\$B2** to **\$C2** for the identifier, and modify the setting **DATES = FALSE**. This removes the dates (which are already displayed in column A).
  - Press **<ENTER>**.

Note the changes to make for the formula in this cell.

	A	B	C	D	E
1					
2	<b>Ticker</b>	FCNTX	POAGX	DODIX	MSSFY
3	<b>Name</b>	Fidelity® Contrafund®	PRIMECAP Odyssey Aggressive Growth	Dodge & Cox Income	Litman Gregory Masters Sm
4	1/2/2019	0.18	"CORR=C, DATES=FALSE,		
5	1/3/2019	-2.81			
6	1/4/2019	3.92			
7	1/7/2019	1.17			
8	1/8/2019	1.06			
9	1/9/2019	0.70			

- Click-and-drag** this formula to the right, to the last cell in the row.
- If needed, click **Cell** to recalculate the spreadsheet.
- Save** the workbook.

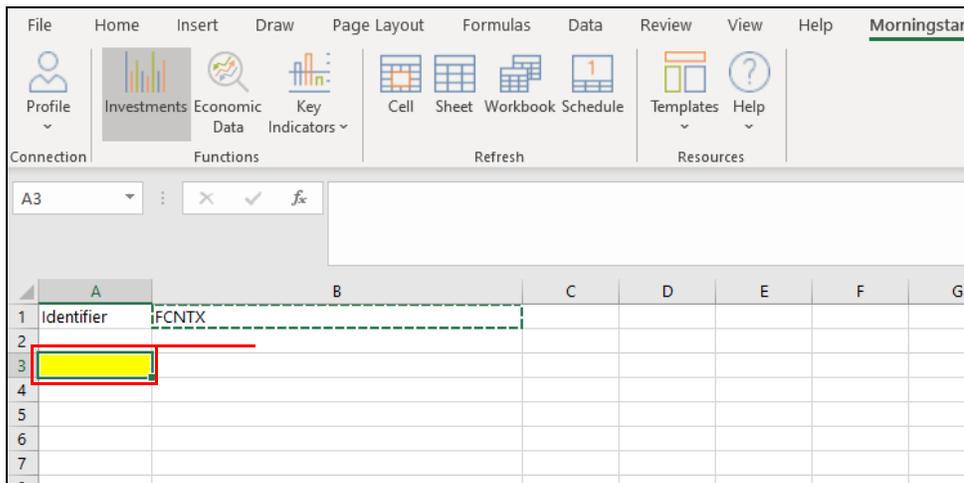
## Retrieving a Portfolio's Holdings

The MSHOLDING formula is designed to retrieve holdings of portfolios. It requires at least the following parameters to retrieve the latest holdings:

- ▶ Portfolio IDs (for example, Ticker, ISIN, CUSIP, or SecID), and
- ▶ Position IDs to define how you would like to see the holdings. For example, you could elect to see the Ticker, ISIN, CUSIP, or SecID of the holdings.

To retrieve portfolio holdings for a fund, do the following:

1. In the Excel file provided, select the **Holdings** worksheet. Notice the ticker in cell B1.
2. **Copy** cell B1.
3. Select cell **A3**, where the data will display.
4. From the Morningstar toolbar, click **Investments**.



Callout

5. Under the Securities heading, select **Holdings**.

### Overview

### Exercise 17: Retrieve portfolio holdings for a fund using the MSHOLDING formula

Retrieving a Portfolio's Holdings

6. In the **Security** field, **paste** the ticker, then select the security when it appears.

The screenshot shows the Morningstar Add-In interface. The 'Security' field contains the ticker 'FCNTX'. A dropdown menu is open, showing a list of securities. The first item, 'NAS:FCNTX Fidelity® Contrafund®', is highlighted in blue. A red box surrounds the 'Security' field and the dropdown menu. A red arrow points from the text 'Select the fund when it appears.' to the highlighted dropdown item. The interface also shows options for 'Layout' (Column selected), 'Output' (Show Headers checked), 'Position ID' (SecId), 'Holding type' (All selected), and 'Frequency' (All selected).

7. The option for **Column** should be selected, and the check box for **Show Headers** should also be selected.
8. From the **Position ID** drop-down field, select **Ticker**.
9. From the Data type section, the option for **Weight (%)** should be selected.
10. Leave all other settings as is and click **Add**, then click **Submit**.

The MSHOLDING formula can easily be modified to see only the top 10 positions. To do so, do the following:

### Exercise 18: Retrieve only the top 10 holdings for a fund

1. Cell **A3** should be selected.
2. From the **Morningstar** toolbar, click **Investments**.
3. In the **Top N Holdings** field, type **10**.

Note the entry in this field.

The screenshot shows the Morningstar Add-In window. The 'Top N holding' field is highlighted with a red box and a red arrow pointing to it from a text box above. The field contains the number '10'. The 'Security' field is set to 'Fidelity® Contrafund®' and the 'Position ID' is 'TICKER'. The 'Frequency' is set to 'All'. The 'Data type' is set to 'Weight(%)'. The 'Sort' options are 'Ascend' and 'Show holding name' is checked.

4. Click **Add**.
5. To the left of the top row, click **X** to delete the first formula.

Click here to delete this row.

The screenshot shows the Morningstar Add-In window. The 'Top N holding' field is still set to '10'. The 'Add' button is visible. The first row in the table below is marked with a red 'X' in the left margin, indicating it has been deleted. The table has columns for 'Security', 'Data Point', and 'Formula'.

6. Click **Submit**. Notice how **top=10** has been added to the formula.

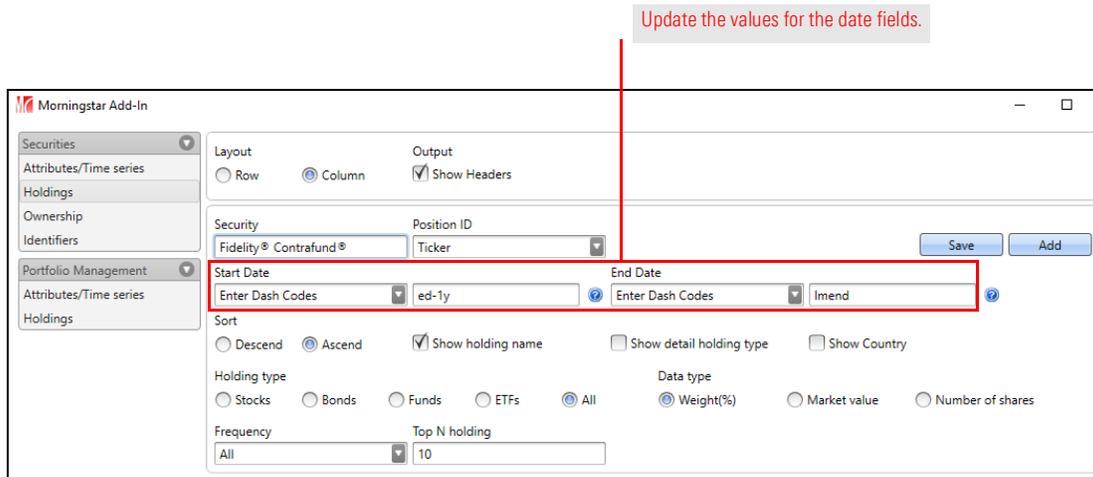
Note this addition to the formula.

```
=MSHOLDING("NAS:FCNTX","TICKER","CORR=C, ASCENDING=TRUE, HT=ALL, WEIGHT=TRUE, FREQ=... TOP=10 NAME=TRUE, SHOWHT=FALSE, SHOWCOUNTRY=FALSE")
```

Amending the formula further allows users to retrieve historical positions for a fund, rather than merely seeing current positions. To see past positions, do the following:

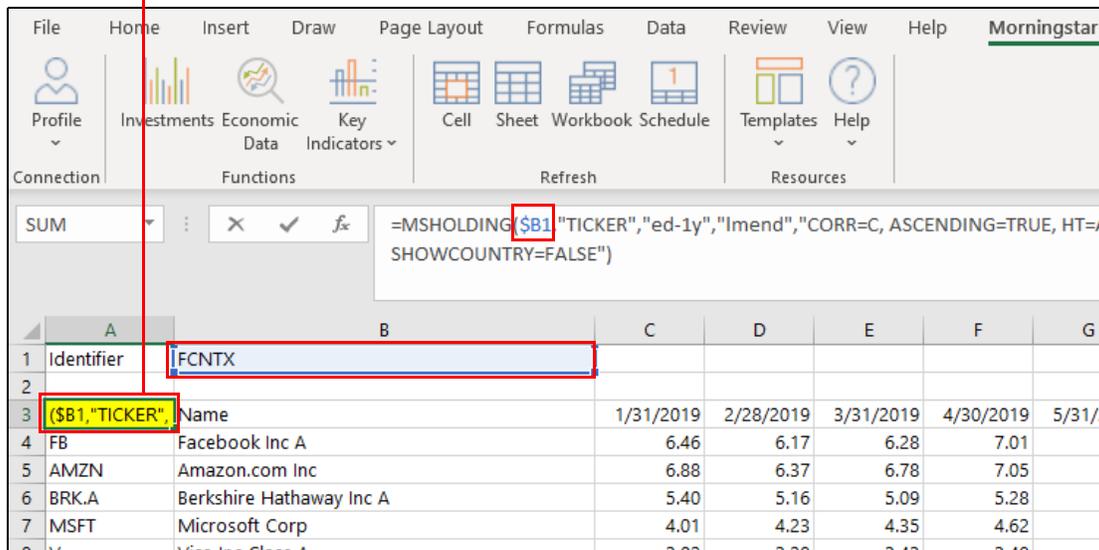
**Exercise 19: Retrieve historical positions for a fund**

1. Cell **A3** should be selected.
2. From the **Morningstar** toolbar, click **Investments**.
3. From the **Start Date** field, select **Enter Dash Codes**, then, type **ed-1y**.
4. From the **End Date** field, select **Enter Dash Codes**, then type **Imend**.



5. Click **Add**.
6. **Delete** the top formula.
7. Click **Submit**.
8. In the **Formula bar** for cell A3, replace the **ticker** a link to cell **\$B1**.

By setting a reference (to cell B1) within the formula, this worksheet can be used as a template. Typing a different ticker in cell B1 will retrieve data for that new security.



9. **Save** the workbook.

## Retrieving Ownership Information for an Investment

The MSOWNER formula retrieves ownership data for investments. This formula can be used, for instance, to identify funds investing in a specific security (for example, a stock, open-end fund, or ETF) over time and the market value of that investment.

Using this formula automatically includes the following columns of data for the owners of the investment:

- ▶ Name
- ▶ SeclD, and
- ▶ Position Market Value.

Users merely need to decide which data point to show (for instance, Portfolio Weight%, or Shares), and over what time period. To avoid seeing too many rows, users can also limit the results to only the top N number of owners for the investment.

To retrieve the historical portfolio weights of managed investments owning Kraft Heinz over the past year, do the following:

1. In the template provided, select the **Owners** worksheet. Note the ticker in cell A1.
2. **Copy** cell **A1**.
3. Select cell **A2**, where the data will display.
4. From the **Morningstar** toolbar, click **Investments**.

### Overview

### Exercise 20: Retrieve ownership data for a stock

The screenshot shows the Morningstar software interface. The 'Morningstar' tab is active in the top ribbon. The 'Investments' button in the 'Functions' group is highlighted with a red box. Below the ribbon, the 'Ownership' worksheet is selected in the bottom navigation bar. In the spreadsheet area, cell A1 contains the ticker 'KHC' and cell A2 is selected. A red box highlights cell A2. A red line connects the 'Investments' button to cell A2. Another red line connects the 'Ownership' worksheet tab to the spreadsheet area.

Note the cell to select before clicking Investments.

Be sure this worksheet is selected.

- Select the option for **Ownership**.
- In the **Security** field, **paste** the ticker from cell A1, then select the correct security when its name appears.

The screenshot shows the Morningstar Add-In interface. The 'Security' field is populated with 'KHC'. Below it, a list of securities is displayed with columns for Security, Name, Universe Type, Exchange, and Domicile. The first row, 'NAS:KHC The Kraft Heinz Co', is highlighted in blue. A red box highlights the 'Security' field and the first row of the list.

Security	Name	Universe Type	Exchange	Domicile
NAS:KHC	The Kraft Heinz Co	ST	NAS	USA
MEX:KHC	The Kraft Heinz Co	ST	MEX	MEX
SWX:KHC	The Kraft Heinz Co	ST	SWX	CHE
WBO:KHC	The Kraft Heinz Co	ST	WBO	AUT
BSP:KHC34	The Kraft Heinz Co ADR	ST	BSP	BRA
BAH:KHCB	Khaleeji Commercial Bank BSC	ST	BAH	BHR
DFM:KHCB	Khaleeji Commercial Bank BSC	ST	DFM	ARE

Be sure to select the security from the correct exchange.

- In the **Ownership Data Point** field, type **Portfolio Weighting %**, then select it when it appears.

The screenshot shows the Morningstar Add-In interface. The 'Ownership Data Point' field is populated with 'Weight'. Below it, a list of data points is displayed with columns for Full Name and Short Name. The first row, 'Portfolio Weighting %', is highlighted in blue. A red box highlights the 'Ownership Data Point' field and the first row of the list.

Full Name	Short Name
Portfolio Weighting %	Portfolio_Weighting_%

Typing even a portion of a data point's name can allow it to be found and selected.

- From the **Start Date** field select **Enter Dash Codes**, then type **ed-1y**.
- From the **End Date** field, select **Enter Dash Codes**, then type **Imend**.
- Click **Add**, then click **Submit**.
- Save** the workbook.

MSTS formulas can handle both static and dynamic dates. Entering a date in formulas keeps them static. Using dynamic codes ensures they update when the calendar rolls to a new month, quarter, or year, depending on the data point settings.

### A short note on using Dash Codes

The following codes can be used for end dates:

Name	Dash Code
Last market close	lmktclose
Last week end	lwend
Last month end	lmend
Last quarter end	lqend
Last semi-year end	lsyend
Last year end	lyend

For start dates, use **ed-[frequency]**. The frequency can be defined in days, weeks, months, quarters, etc. To define one week, use either **w1** or **1w**. The letter used for those frequencies are based on the English language (**d** for day, **w** for week, **m** for month, and so on).

The following table offers a few examples of the dash codes to use for a variety of time periods:

To cover this time period...	Enter this dash code for the Start Date...	And this dash code for the End Date...
One year prior to the latest month end	ed-1y	lmend
Year-to-date, up to the latest month end	ed-x0 ☞ -x0 always reverts to the start of the year	lmend
Month-to-date through the latest market close	ed-m0 ☞ -m0 always reverts to the start of the month	lmktclose