Morningstar® Direct℠ **Excel API**

Morningstar Excel API allows you to retrieve various types of data points from the Morningstar databases and load them into Microsoft Excel for further calculation, formatting or charting. Thousands of widely used data points per investment type are available. Currently, Morningstar Excel API can support the following databases: Mutual funds, closed-end funds, stocks, ETFs, money market funds, hedge funds, separate accounts, market indices, categories and accounts/model portfolios/custom benchmarks. Economic data is also available and will continue to grow.

Watch the Introductory Video

Outline

- ▸ Install Morningstar Excel API
- ▸ Data Retrieval Functions
- ▸ Data Retrieval Wizard
- ▸ Dash Code Functions
- ▸ Learning Tools
- ▸ Templates

Install Morningstar Excel API

1. To install Morningstar Excel API, you need Microsoft Office version 2003 or higher. Go to Home and click on Excel API to be taken to its landing page. At the top menu bar, you have access to the Quick Start, Downloads, User Guide, Templates, and FAQs. Click on *Downloads*.
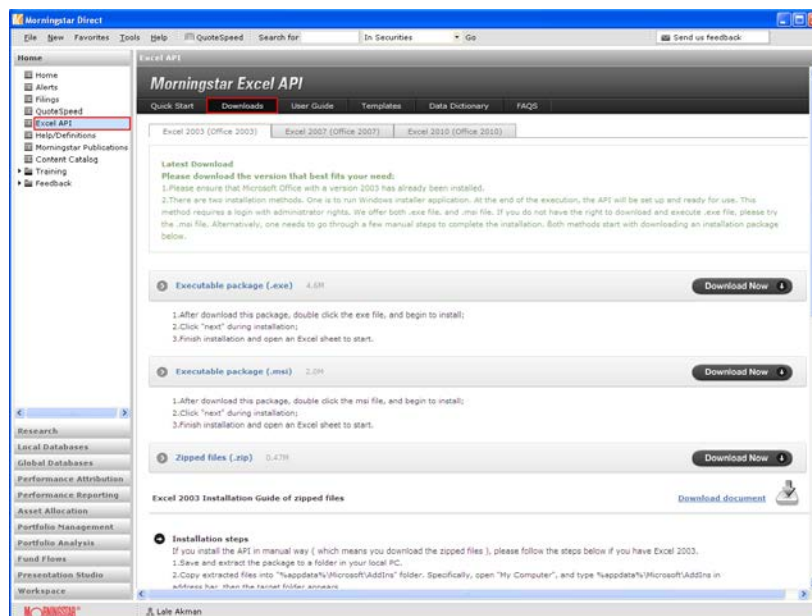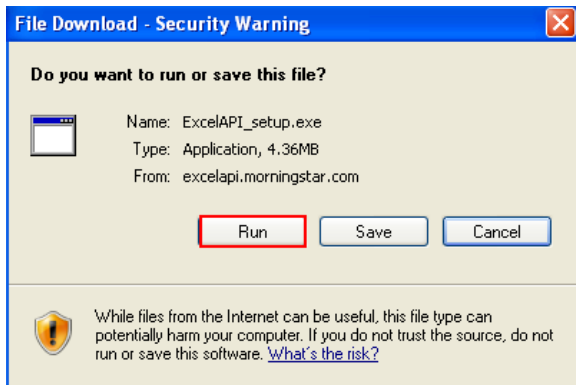
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2. You have three choices. You can download the API to Excel 2003, Excel 2007, or Excel 2010. For demonstration purposes, we will use Excel 2003 which is activated as the default tab. Go to the Executable package (.exe) and click on *Download Now*.
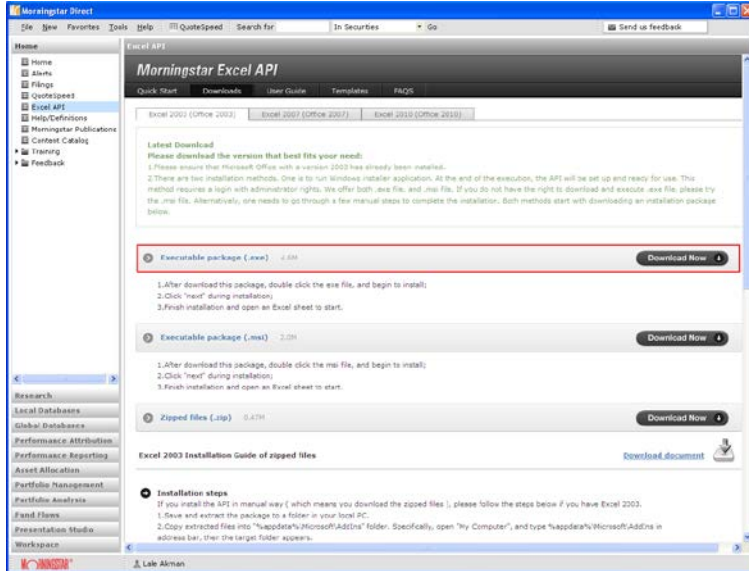
3. You will be taken to the File Download window. Click *Run*.

4. Once the download is complete, open a new workbook in Microsoft Excel where you will now see the Morningstar add-in listed in the menu bar. You have successfully downloaded the Morningstar Excel API.

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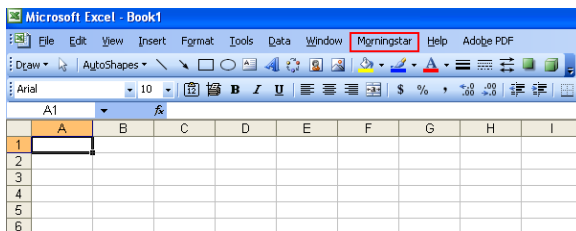
Data Retrieval Functions

Morningstar Excel API provides five data retrieval functions: MSDP, MSTS, MSDate, MSHOLDING and MSMEMBER.

MSDP, MSTS, MSHOLDING functions work the same way for funds, stocks and accounts/model portfolios/custom benchmarks. All the examples below use funds or stocks for these three functions but you can apply the same logic to accounts/model portfolios/custom benchmarks by following the wizard to retrieve the global unique identifier (GUID) shown in the Formula Result Box to then get the corresponding data.

Click Here for Guide on Accounts/Model Portfolios/Custom Benchmarks

1. MSDP (Morningstar Data Point)

▸ Retrieve discrete value
▸ Requires 2 parameters: security identifier and data attribute identifier
▸ Example:＝MSDP("MORN","sector")

MSDP is designed for retrieving current data points such as stock name, Morningstar Category for a mutual fund share class. MSDP requires two parameters, security identifier and data attribute identifier.

Security identifiers are trading symbol (long form such as NAS:AAPL or short form such as AAPL), ISIN, and CUSIP. When security types are not traded on exchanges, you need to provide an identifier defined by Morningstar (SecID). This would apply to market indices, separate accounts, and pension/life products.

As mentioned above, the security identifier for accounts/model portfolios/custom benchmarks is the global unique identifier (GUID), which can only be found in Direct log file - shown in the Formula Result Box.

Data point or attribute identifier defines the data point uniquely. Therefore, the data point names in text serve as the data identifier. For example, "name" represents name, "close" represents security closing price, or "ret_market" represents market return. Parameter values are presented in quotation marks and separated by commas.

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Example 1: for single security with single data point

=MSDP("GOOG"," Base_CUR")   =MSDP("A2", "B1")

Example 2: for single security with multiple attributes

=MSDP($A2, B1) or MSDP($A2,C1) or MSDP($A2, D1)

Example 3: for multiple securities with multiple data points

=MSDP($A2, B$1)

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2. MSTS (Morningstar Time Series)

- Time series calculation
- 4 parameters required: security identifier, data attribute identifier, start date, end date

For most time series data like price, MSTS requires at least four parameters, but for custom calculation data points, MSTS requires more parameters dependent on the data point requirements. For example: to calculate an average, MSTS also requires source parameter; to calculate beta, MSTS requires source, benchmark, and RFP parameters – all dependent on your target data points.

Click Here for Guide on Custom Calculations

- Relative dates can be applied
- Example:=MSTS("SEQUX","return","01/01/2012","lmktclose")

MSTS is designed for retrieving data time series such as historical prices for stocks, NAVs for mutual fund, or historical calendar period returns for securities. MSTS requires a minimum of four parameters - security identifier, data point identifier, start date, and end date. For information on security identifier and data point identifier, refer to the MSDP section above. For start data and end data, the time range is defined for the intended data series. For example, function =MSTS("COLB", "close", "3/1/2011", "3/31/2011")" retrieves daily close price of Columbia Banking System, Inc. from 3/1/2011 to 3/31/2011.

Additional parameters are also offered to meet specific needs. For example, daily series can be displayed fully or at a lower frequency such as weekly or monthly. A maximum of fifteen parameters can be utilized to fully convey the return data requirements.

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Example 1: to generate historical series
=MSTS("WFC", "close", "3/1/2011", "3/31/2011")

Example 2: to retrieve return data point by using "return" as data point identifier and specifying return type as the additional parameter
=MSTS("TSE:WFC","**return**", "3/1/2011", "3/31/2011","CorR=R,Dates=True,Freq=D,Days=C,Fill=B,Curr=USD, rtype= **total**")

Example 3: to retrieve return data point by using "return type" as data point identifier and achieve the same result
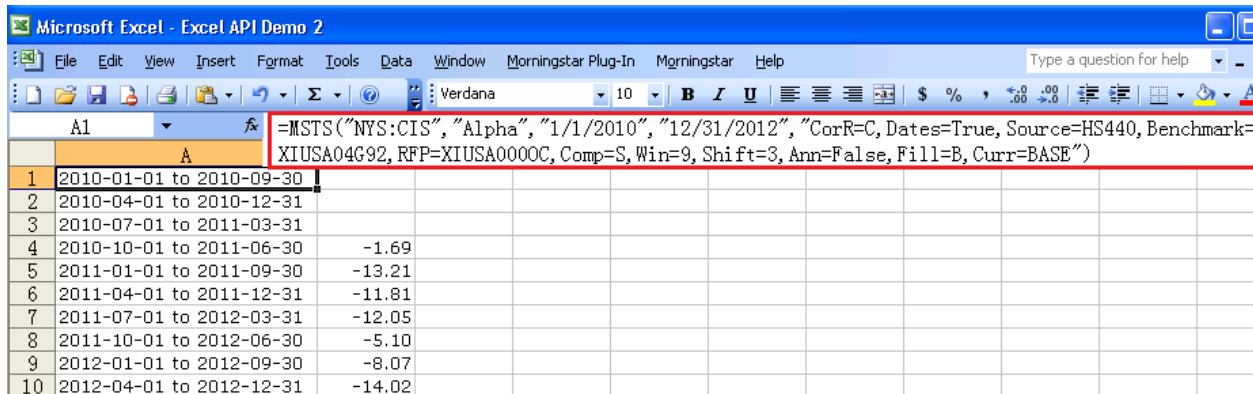=MSTS("TSE:WFC","total_ret", "3/1/2011", "3/31/2011","CorR=R,Dates=True,Freq=D,Days=C,Fill=B,Curr=USD")

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Example 4: to calculate alpha for stocks
=MSTS("NYS:CIS","Alpha","1/1/2010","12/31/2012","CorR=C,Dates=True,Source=HS440,Benchmark=XI
USA04G92,RFP=XIUSA000OC,Comp=S,Win=9,Shift=3,Ann=False,Fill=B,Curr=BASE")
HS440 is ID of monthly market return; XIUSA04G92 is ID of S&P 500 TR; XIUSA000OC is ID of USTREAS T-
Bill Auction Ave 3 Mon;
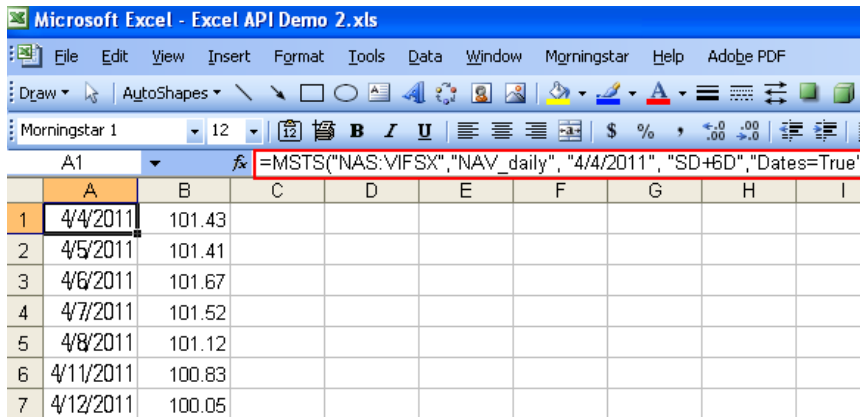
In the examples above, we indicated the start and end date but there are many different ways to save time in specifying a time range clearly without having to type full values for start date and end date. Below are two groups of examples to apply relative dates.

Group 1: Using "+" or "−" to define a date relative to a specific date

For example, with SD representing start date and ED representing end date, you can use "+" and "−" to define a date relative to a specific date. Date abbreviations are: D for working daily, W for week, M or C for month, Q for quarter, Y, X or G for year, S for half year. For detailed definition of these parameters, please refer to dash code part.

Example 1: when end date equals the start date <u>plus</u> six days
=MSTS("NAS:VIFSX","NAV_daily", "4/4/2011", "SD+6D","Dates=True")

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Example 2: Alternatively, when start date equals the end date <u>minus</u> six days
=MSTS("NAS:VIFSX","NAV_daily", "ED-6d", "4/12/2011","Dates=True")
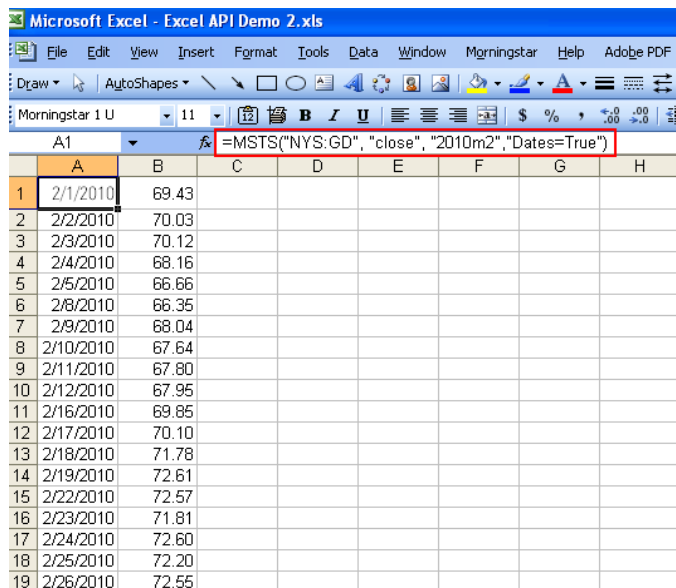
Group 2: Using frequency abbreviations to retrieve values for the whole calendar period.

M represents monthly, Q represents quarterly, and S represents half year. Please note that a similar logic may be provided in a future release to address fiscal calendar periods.

Example 1: to retrieve daily closing prices for the month of February 2010
=MSTS("NYS:GD", "close", "2010m2","Dates=True")

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Example 2: to retrieve daily closing prices for the first quarter of 2010
=MSTS("NYS:GD", "close", "2010Q1","Dates=True")

Example 3: to retrieve daily closing prices for the first half of the year, 2010
=MSTS("NYS:GD", "close", "2010S1","Dates=True")

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The table below shows the full range of configuration capability. In the Possible Values column, the first value is considered the default value with the exception of the rtype parameter. Therefore, if you do not specify a parameter explicitly, Morningstar API will use the first value by default.

Parameter Name	Description	Possible Values
CorR	Indicate whether retried values be displayed vertically or horizontally	C for the next cell in the same column
		R for the next cell in the same row
Dates	Show the dates or not	True for show the dates
		False for hide the dates
Freq	Base frequency of retuned data	D for daily
		W for weekly
		M for monthly
		Q for quarterly
		S for semi annually
		Y for yearly
		1 for day to day return
Days	Typically used to indicate whether to return values for all calendar days, days with actual values in the database or week days	C for returning data of all calendar days
		W for returning data week days
		T for returning data trading days
Fill	Designed to deal with days without real values, like a non-trading days	C for carrying over the last available data
		P for carrying over the previous day's data
		B for showing blank
		0 for filling 0
Curr	Currency of the returned data	The three letter ISO currency code, in quotation marks, i.e., "EUR" for Euro.
Scale	Reduce result 10x times	0, 00, 000, 000,000, etc
rType	Apply only to return data points, indicate return type. Default value for Italy and UK mutual fund is post tax return; for other domiciled mutual fund is total return; For closed ends, ETF, stocks and market index are market return; for money market fund is total return; for separate account is gross return.	B2P for Bid Price Return
		B2B for Bid-Bid Return
		gross for Gross Return
		income for Income Return
		investor for Investor Return
		market for Market Return
		net for Net Return
		O2B for Offer Bid Return
		post_tax for Post-Tax Return
		price for Price Return
		total for Total Return
Ann	Retrieve annualized or not annualized day to day return.	False for not annualized day to day return
		True for annualized day to day return
Source	Source data used to calculate the target custom ca	Data Point ID, e.g. HP010 for Monthly Return
Benchmark	Benchmark used to calculate the selected custom c	SecID of securities
RFP	Risk-free proxy	SecID of securities
Comp	Compounding Method	S for standard; L for logarithmic;
Win	Rolling windows	Positive numbers
Shift	Window shift	Positive numbers

3. MSDate (Morningstar Date)

▸ Retrieve dynamic dates
▸ Examples:＝MSDATE("lmktclose")

MSDate is designed to provide more convenience in defining time periods or effective dates. For example, MSDate can be used to dynamically retrieve last year end, last quarter end, last month end, last week end and last market close date. This function is considered necessary when you need to move time windows dynamically. Below is a table of these important dates.

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

Example 1: to retrieve the date for last year end
＝MSDATE("lyend")
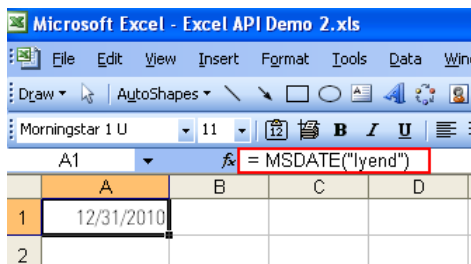
Example 2: to retrieve the date for last quarter end
＝ MSDATE("lqend")
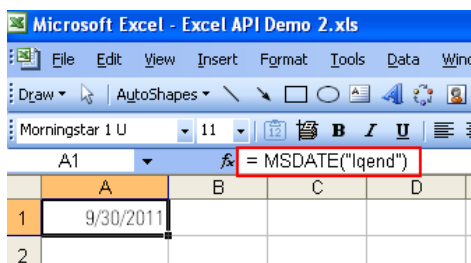
4. MSHOLDING (Morningstar Holding Data)

▸ Retrieve holding data
▸ Require 2 parameters to retrieve latest holding: portfolio ID and position ID
▸ Require 4 parameters to retrieve historical holding: portfolio ID, position ID, start date, end date
▸ Example: =MSHOLDING("VFIAX","ISIN",),
=MSHOLDING("SAUSA000WL;SA","TICKER","1/1/2011","12/31/2011")

MSHOLDING is designed for retrieving holdings of portfolios. MSHOLDING requires at least two parameters to retrieve the latest holding, portfolio ID and position ID. Portfolio IDs are ticker, ISIN, CUSIP and Morningstar SecID, the same as security identifiers of MSDP and MSTS. Position IDs define the output IDs of holdings and could be ticker, ISIN, CUSIP and Morningstar SecID.

MSHOLDING requires a minimum of four parameters to get historical holdings, portfolio ID, position ID, start date and end date.
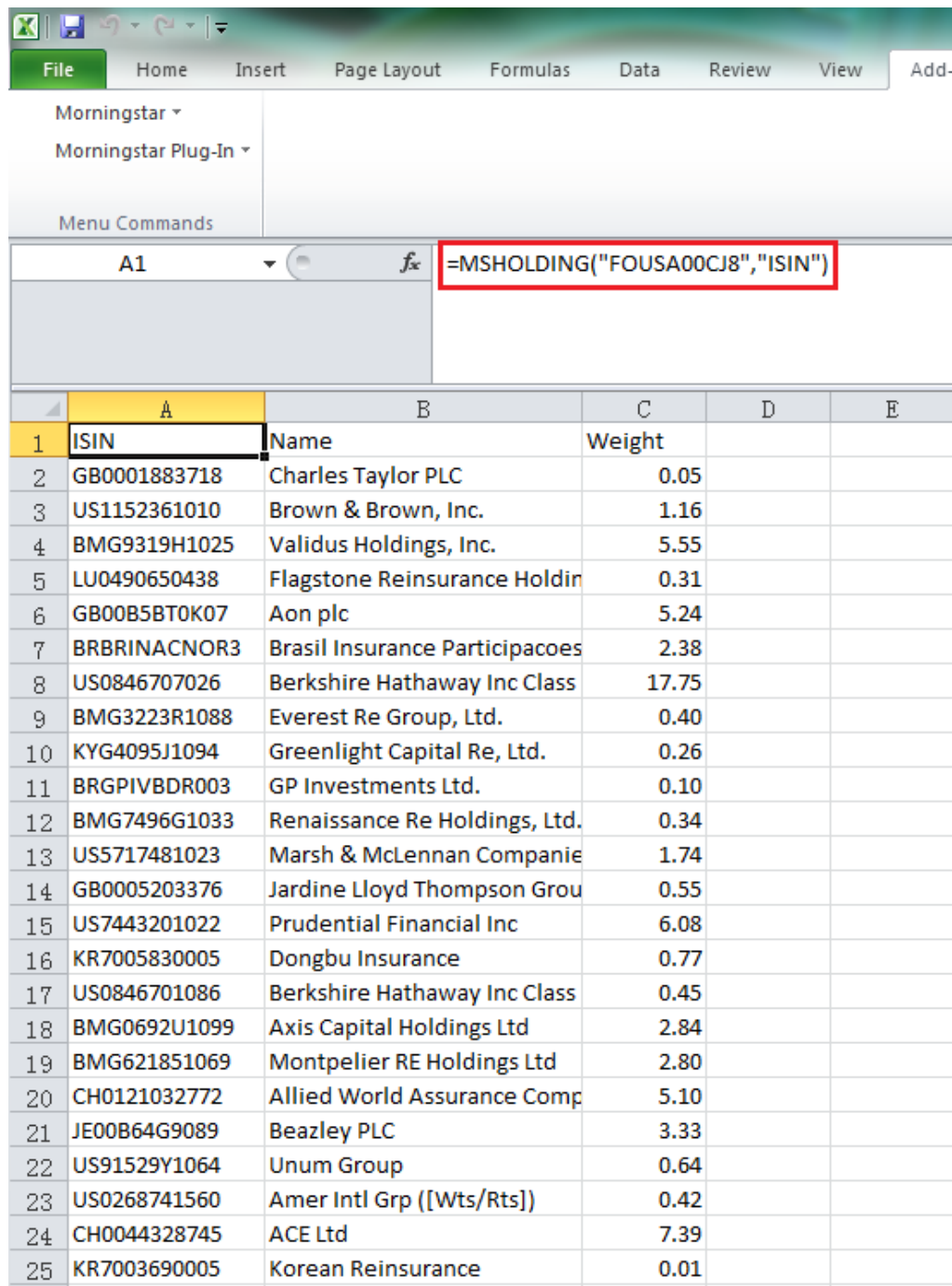
Additional parameters are offered to meet more needs. The table below shows all additional parameters.

Parameter Name	Parameter Value
Holding Type/HT	all/stocks/bonds/cash/other, default as "all".
Freq	A/D/M/Q/Y, A for all available portfolios, default as "A".
Name	True/False, default as true.
Weight	True/False, default as true.
Shares	True/False, optional parameter, default as false.
Market Value/MV	True/False, optional parameter, default as false.
Curr	True/False, optional parameter, default as false.

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Example 1: to retrieve latest holdings
=MSHOLDING("FOUSA00CJ8","ISIN")
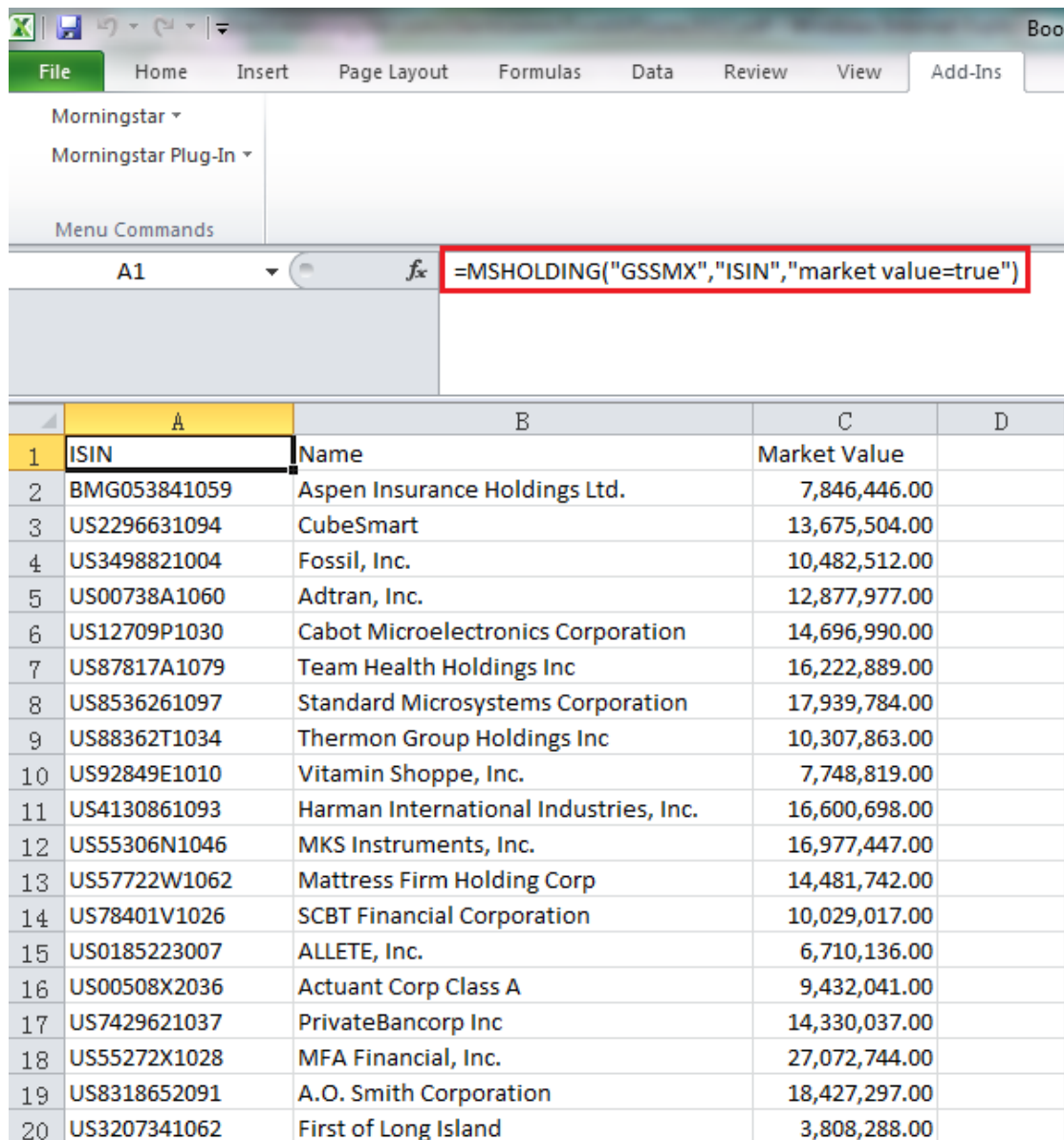
	A	B	C
1	ISIN	Name	Weight
2	GB0001883718	Charles Taylor PLC	0.05
3	US1152361010	Brown & Brown, Inc.	1.16
4	BMG9319H1025	Validus Holdings, Inc.	5.55
5	LU0490650438	Flagstone Reinsurance Holdin	0.31
6	GB00B5BT0K07	Aon plc	5.24
7	BRBRINACNOR3	Brasil Insurance Participacoes	2.38
8	US0846707026	Berkshire Hathaway Inc Class	17.75
9	BMG3223R1088	Everest Re Group, Ltd.	0.40
10	KYG4095J1094	Greenlight Capital Re, Ltd.	0.26
11	BRGPIVBDR003	GP Investments Ltd.	0.10
12	BMG7496G1033	Renaissance Re Holdings, Ltd.	0.34
13	US5717481023	Marsh & McLennan Companie	1.74
14	GB0005203376	Jardine Lloyd Thompson Grou	0.55
15	US7443201022	Prudential Financial Inc	6.08
16	KR7005830005	Dongbu Insurance	0.77
17	US0846701086	Berkshire Hathaway Inc Class	0.45
18	BMG0692U1099	Axis Capital Holdings Ltd	2.84
19	BMG621851069	Montpelier RE Holdings Ltd	2.80
20	CH0121032772	Allied World Assurance Comp	5.10
21	JE00B64G9089	Beazley PLC	3.33
22	US91529Y1064	Unum Group	0.64
23	US0268741560	Amer Intl Grp ([Wts/Rts])	0.42
24	CH0044328745	ACE Ltd	7.39
25	KR7003690005	Korean Reinsurance	0.01

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Example 2: to retrieve market value of latest holdings
=MSHOLDING("GSSMX","ISIN","market value=true")

	ISIN	Name	Market Value	
1	ISIN	Name	Market Value	
2	BMG053841059	Aspen Insurance Holdings Ltd.	7,846,446.00	
3	US2296631094	CubeSmart	13,675,504.00	
4	US3498821004	Fossil, Inc.	10,482,512.00	
5	US00738A1060	Adtran, Inc.	12,877,977.00	
6	US12709P1030	Cabot Microelectronics Corporation	14,696,990.00	
7	US87817A1079	Team Health Holdings Inc	16,222,889.00	
8	US8536261097	Standard Microsystems Corporation	17,939,784.00	
9	US88362T1034	Thermon Group Holdings Inc	10,307,863.00	
10	US92849E1010	Vitamin Shoppe, Inc.	7,748,819.00	
11	US4130861093	Harman International Industries, Inc.	16,600,698.00	
12	US55306N1046	MKS Instruments, Inc.	16,977,447.00	
13	US57722W1062	Mattress Firm Holding Corp	14,481,742.00	
14	US78401V1026	SCBT Financial Corporation	10,029,017.00	
15	US0185223007	ALLETE, Inc.	6,710,136.00	
16	US00508X2036	Actuant Corp Class A	9,432,041.00	
17	US7429621037	PrivateBancorp Inc	14,330,037.00	
18	US55272X1028	MFA Financial, Inc.	27,072,744.00	
19	US8318652091	A.O. Smith Corporation	18,427,297.00	
20	US3207341062	First of Long Island	3,808,288.00	

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Example 3: to retrieve number of shares and currency of latest holdings
=MSHOLDING("FOUSA00CJA;FO","Ticker","shares=true,curr=true")

	A	B	C	D	E	F
1	Ticker	Name	Currency	Shares		
2	ITX	Industria De Diseno Textil SA	EUR	106,654		
3	WMT	Wal-Mart Stores Inc	USD	180,000		
4	DSW	DSW Inc	USD	67,800		
5	ORLY	O'Reilly Automotive Inc	USD	152,000		
6	DKS	Dick's Sporting Goods, Inc.	USD	257,000		
7	CTRN	Citi Trends, Inc.	USD	126,633		
8	COST	Costco Wholesale Corporation	USD	36,000		
9	VFC	VF Corporation	USD	55,600		
10	LOW	Lowe's Companies Inc.	USD	2,033,400		
11	LULU	Lululemon Athletica, Inc.	USD	64,908		
12	SBH	Sally Beauty Holdings Inc	USD	405,714		
13	TTWO	Take-Two Interactive Software, Inc.	USD	454,000		
14	TGT	Target Corp	USD	233,421		
15	SUSS	Susser Holdings Corporation	USD	37,228		
16	GIII	G-III Apparel Group, Ltd.	USD	389,500		
17	HD	Home Depot, Inc.	USD	770,200		
18	ROST	Ross Stores, Inc.	USD	394,200		
19	M	Macy's Inc	USD	74,754		
20	LTD	Limited Brands, Inc.	USD	634,198		
21	TJX	TJX Companies	USD	872,400		

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Example 4: to retrieve historical holdings

=MSHOLDING("FOUSA00EMV;FO","CUSIP","1/1/2011","12/31/2011")

	CUSIP	Name	1/31/2011	2/28/2011	3/31/2011	4/30/2011
1	CUSIP	Name	1/31/2011	2/28/2011	3/31/2011	4/30/2011
2	649906MB7	New York St Dorm Auth 5%	0.16	0.16	0.16	0.15
3	677525TF4	Ohio St Air Quality Dev Auth 5.625%	0.07	0.06	0.06	0.06
4	64988TEB0	New York St Mun Bd Bk Agy Spl Rev 5.25%	0.43	0.43	0.43	0.43
5	04780MMN6	Atlanta Ga Arpt Rev General R 6%	0.48	0.49	0.50	0.50
6	769369AL3	Riverton Utah Hosp Rev Rev Bds 5%	0.20	0.20	0.20	0.20
7	118217AT5	Buckeye Ohio Tob Settlement Fi Toba 6.5%	0.41	0.41	0.42	0.42
8		USTREAS T-Bill Cnst Mat Rate 5 Yr	-0.01	-0.01	-0.01	-0.02
9	1307954K0	California Statewide Cmntys De Rev Re 5%	0.37	0.37	0.38	0.38
10	185072DL6	Clearview N J Regl High Sch Di Re 5.375%	0.17	0.17	0.16	0.16
11	452252CZ0	Illinois St Toll Hwy Auth 5%	0.66	0.66	0.67	0.68
12	4423483V8	Houston Tex Arpt Sys Rev Senior Li 5.5%	0.13	0.13	0.13	0.13
13	452227DN8	Illinois St Sales Tax Rev Build Ill 5%	0.30	0.30	0.30	0.30
14	199010AC3	Columbus-Citation Hsg Corp Ohi Mt 7.625%	0.19	0.19	0.19	0.18
15	74529JLX1	Puerto Rico Sales Tax Fing Cor Sales 5%	0.10	0.09	0.08	0.08
16	955070AC1	West Palm Beach Fla Cmnty Rede Tax In 5%	0.12	0.12	0.12	0.12
17	176553ET8	Citizens Ppty Ins Corp Fla Senior 5.25%	0.14	0.14	0.14	0.14
18	66285WGT7	North Tex Twy Auth 5.5%	0.14	0.14	0.14	0.14
19	052476TP3	Austin Tex Wtr & Wastewater Sy Wt 5.125%	0.29	0.29	0.29	0.29
20	596126BT8	Middleburg Heights Ohio Hosp R Ref 5.25%	0.10	0.10	0.09	0.09
21	67766YAB4	Ohio St Wtr Dev Auth 5.15%	0.10	0.09	0.08	0.08
22	48543BNQ7	Kansas St Dev Fin Auth 5.125%	0.06		0.03	0.03

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Example 5: to retrieve historical stock holdings

=MSHOLDING("PBFBX","ISIN","1/1/2012","6/30/2012","Freq=A,Holding type=stocks,MV=true,name=true")

5. MSMEMBER (Morningstar Fund groups)

‣ Retrieve IDs of investment list or search saved in Direct
‣ Require 3 parameters to retrieve IDs of investment list or search: Source ID, Group Value and Security ID.
‣ Example: =MSMEMBER("L","SAMPLE-US OE","SecId")
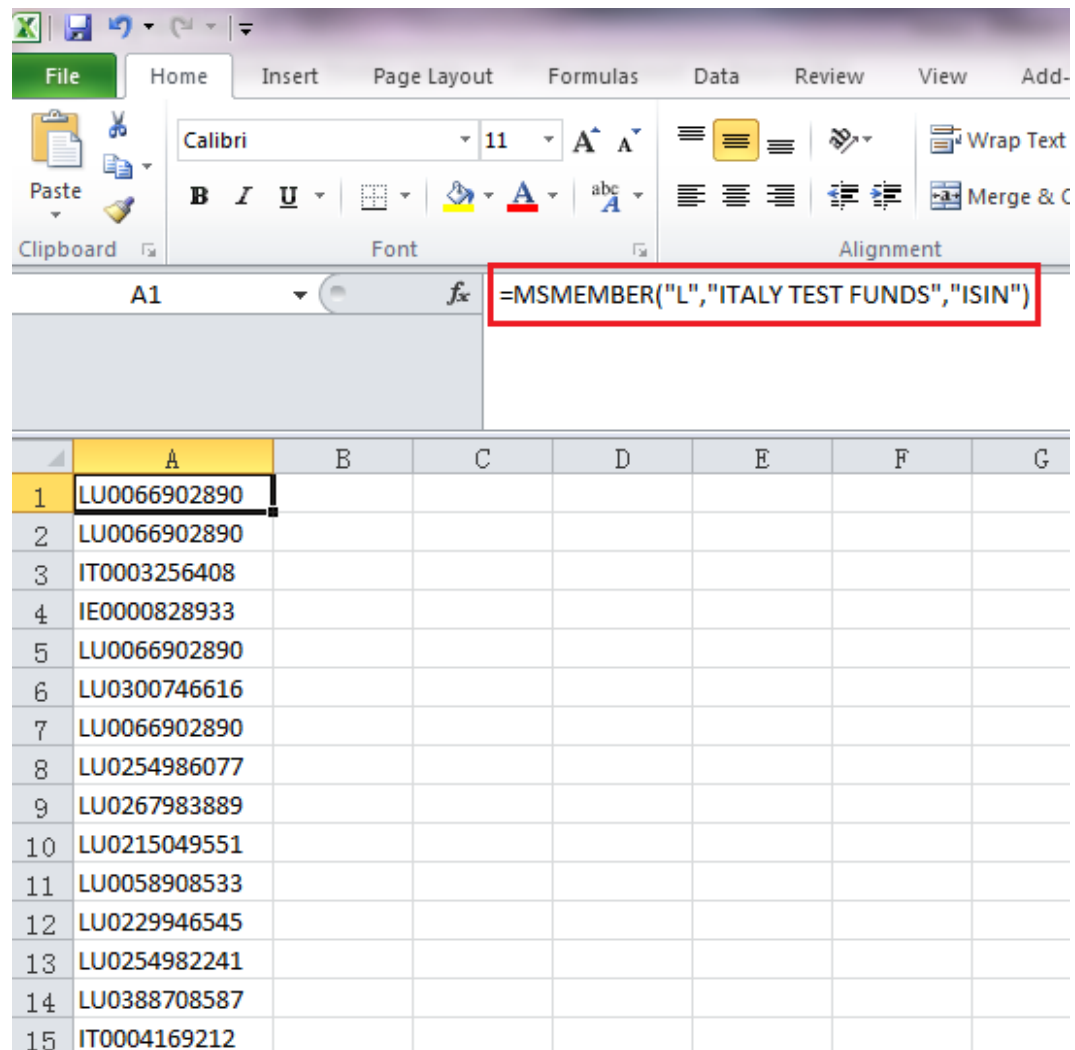
MSMEMBER is designed for retrieving the IDs of all members of an investment list or a search, which is saved in Direct. MSMEMBER requires three parameters, Source ID, Group Value and Security ID. Source ID defines the source, "L" for investment list and "S" for search. Group Value is investment list name or search name. Security ID defines the output IDs of members and could be ISIN, Ticker, CUSIP, and SecID.

Additional parameter "CorR" is offered to indicate whether retried values are displayed vertically or horizontally, "C" for the next cell in the same column and "R" for the next cell in the same row.

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Example 1: to retrieve IDs of members for an investment list
=MSMEMBER("L","ITALY TEST FUNDS","ISIN")

Example 2: to retrieve IDs of members for a search
=MSMEMBER("S","5 STAR","SecId","CORR=R")
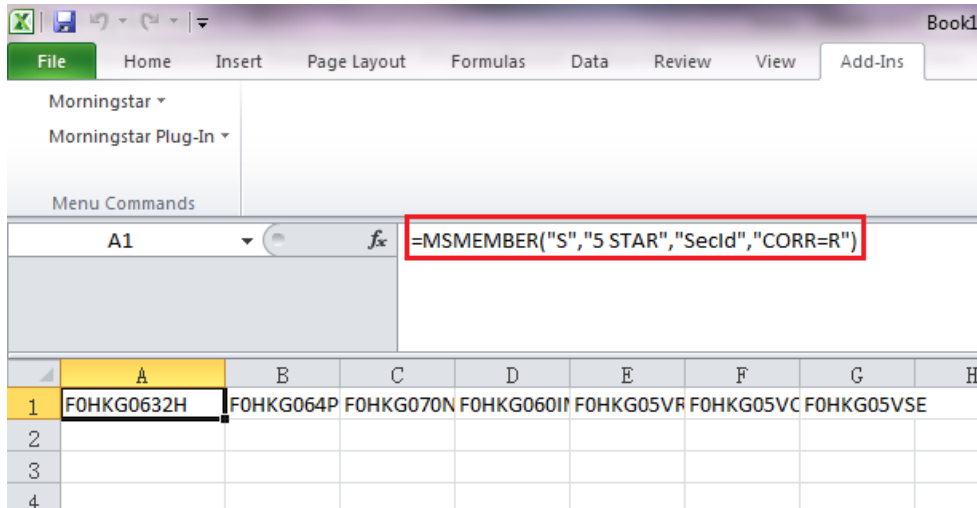
Data Retriever Wizard

Data Retriever Wizards (investment data retriever wizard and economic data retriever wizard) are convenient tools to specify your data needs. If you are building a new formula into a cell, you need to find Data Retriever wizards from the menu indicated below. Data wizards are applicable for MSDP, MSTS, MSHOLDING and MSMEMBER functions, but not applicable for the MSDate function, since you can "show dates" as seen in the image below.

1. Before you launch the wizard, click on a cell where the resulting formula will be entered (e.g. A1). Proceed to go to the Morningstar add-in and click on Investment Data or Economic Data.

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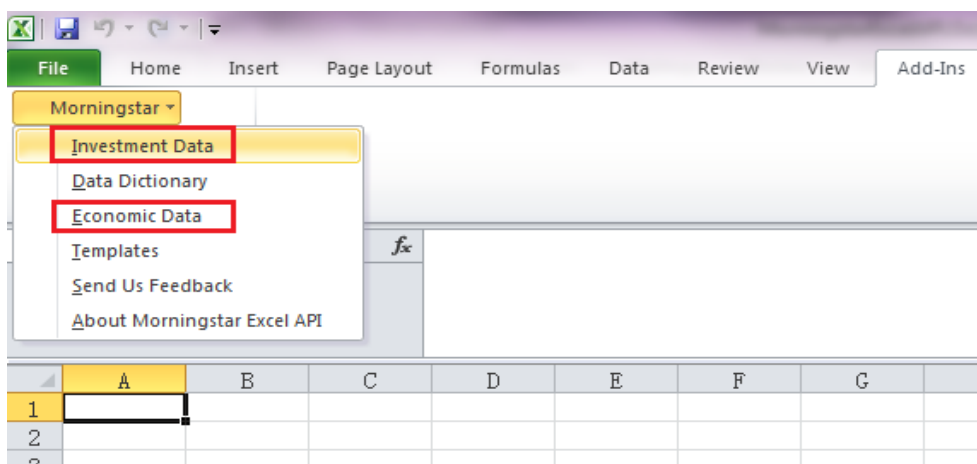
2. For demonstration purposes, we will discuss the **Investment Data Retriever Wizard** first and fill in the necessary criteria to generate your formula. Investment Data Retriever Wizard has two tabs:

- the Securities tab is for funds, stocks, indices and separate accounts
- the Portfolio Management tab is for accounts, model portfolios and custom benchmarks.

There are three sub-tabs available in the Securities tab: Attribute/Time Series, Holdings and Identifier and two sub-tabs available for Portfolio Management tab: Attribute/Time Series and Holdings. As we go through each sub-tab, notice the formulas in the bottom box.

Attribute/Time Series Sub Tab

Supplementary/Time Series sub-tab is applicable for MSDP and MSTS functions.

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Parameters	Description
Security	Available under Securities tab; Find specific security by name, ticker or ISIN; An auto look-up.
Object	Available under Portfolio Management tab; Select the target object, accounts, models portfolios or custom benchmarks.
Accounts	Available under Portfolio Management tab; Select accounts, models portfolios or custom benchmarks for the dropdown.
Data Point	Find data point name with auto look-up.
Currency	Select currency.
Start Date	Select start date of time series data.
End Date	Select end date of time series data.
Layout	Select column or row layout.
Show Dates	Check "show dates" to display corresponding dates.
Fill	Select the returned value for non-trading days.
Frequency	Select the display frequency for time series data.
Return Type*	Select total, market, post-tax or other return type;
Annualized*	Check annualized if you want to annualize your return;
Source**	Select source data from the dropdown;
Benchmark**	Find the benchmark to calculate the custom calculation data; An auto look-up.
Risk-free proxy**	Find the Risk-free proxy to calculate the custom calculation data; An auto look-up.
Compounding method**	Select the Compounding method
Rolling window**	Set the time period for each calculation
Window shift**	Set how often each calculation is performed
Formula	View your formula as you fill in the parameters; At any point, you can copy the formula in to an active cell.

* Return Type and Annualized are activated when using return datapoints.

**Source, Benchmark, Benchmark, Risk-free proxy, Compounding method, Rolling window and are activated when using custom calculation datapoints.

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Holdings

Holdings sub-tab is applicable for MSHOLDING function.

Parameters	Description
Security	Available under Securities tab; Find specific security by name, ticker or ISIN; An auto look-up.
Object	Available under Portfolio Management tab; Select the target object, accounts, models portfolios or custom benchmarks.
Accounts	Available under Portfolio Management tab; Select accounts, models portfolios or custom benchmarks for the dropdown.
Position ID	Select from ISIN, ticker or SecID.
Start Date	Select start date of time series data.
End Date	Select end date of time series data.
Holding Type	Select from stocks, bonds or all holding.
Data Type	Select from weight, market value or number of shares.
Show name	Check "show name" to display name of holdings.
Frequency	Select the display frequency for time series data.

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Identifiers

Identifiers sub-tab is applicable for MSMEMBER function.
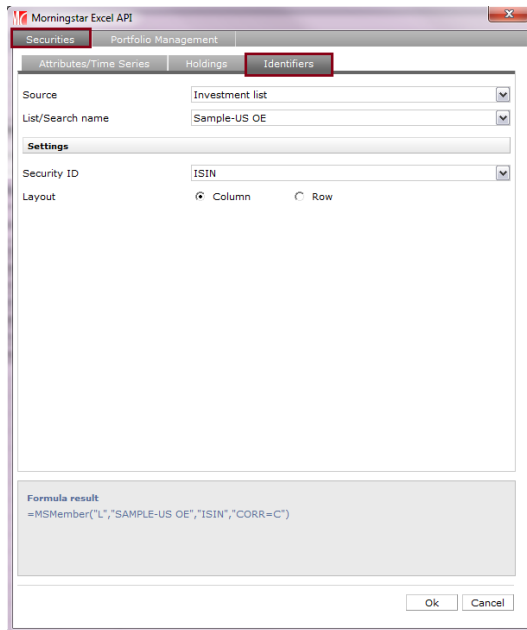
Parameters	Description
Source	select from investment list or search.
List/Search name	select name of investment list or search.
Security ID	select from ISIN, Ticker, CUSIP or SecID.
Layout	select column or row layout.
Formula	view your formula as you fill in the parameters. At any point, you can copy the formulas into an active cell.

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3. Let's now turn our attention to **Economic Retriever Wizard** which is applicable to MSDP and MSTS functions to retrieve discrete and series value of economic indicators.

Criteria Tab: to set criteria and select indicators

- Country: both country level and US regional level indicators are available; a country tree is provided.
- Concept: select concept from dropdown list. Concept is a broad category of indicators.
- Category: select category from dropdown list. Category is sub-classification of Concept.
- Location: applicable for US regional indicators only. Type a key word in the box and API will search by "contain" logic.
- Name: type a key word in the box and API will search by "contain" logic.
- Frequency: select disclosure frequency of indicators.

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Settings Tab: to define more information

- Display: pick up the data point for selected indicators.
- Start date: select start date of series value.
- End date: select end date of series value.
- Layout: select column or row layout.
- Show Dates: check "show dates" to display corresponding dates.
- Days: select from trading days/activity days, calendar days or weekdays.
- Fill: select the returned value for non-trading days.
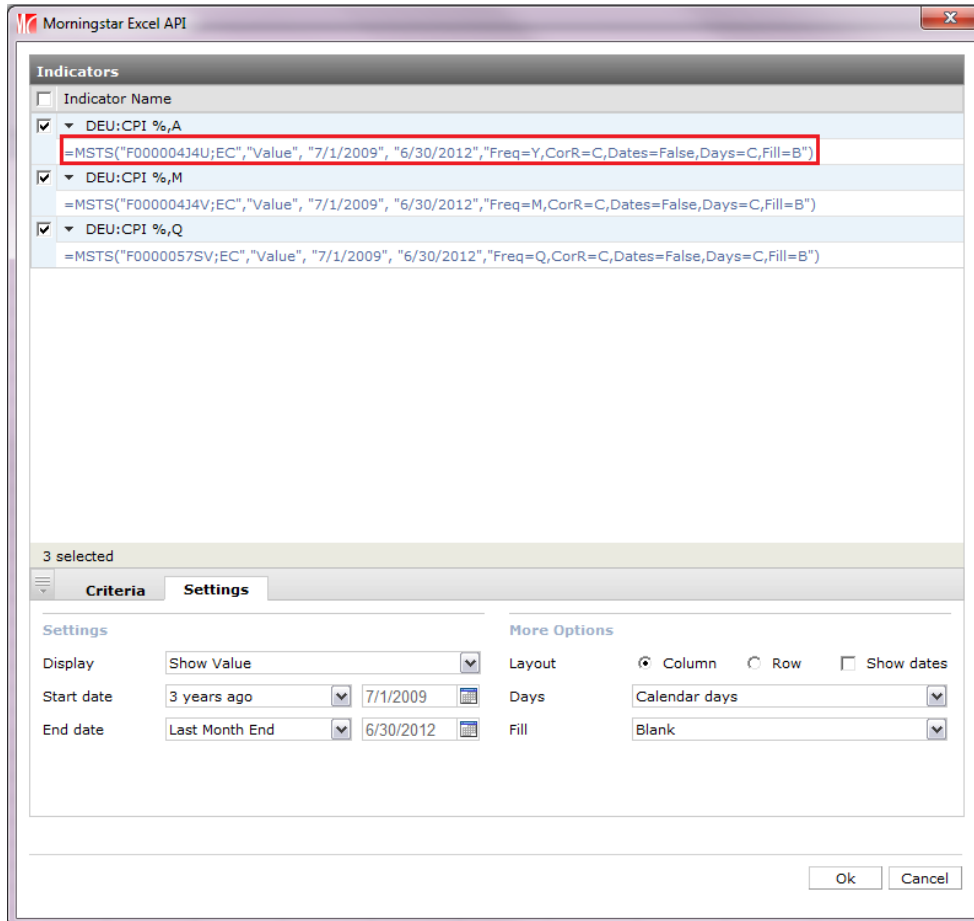
Once complete with your settings, click OK and your result will be displayed in Excel.

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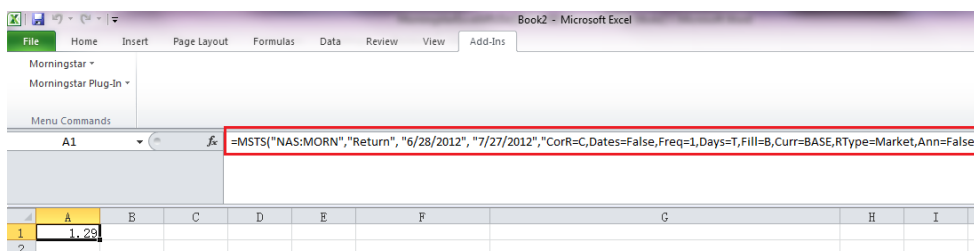
Dash Code Functions

Dash codes in Morningstar Excel API is an extension of the data retrieval functions where you can specify the start and end date in relation to a chosen number of periods before the current date or specified end date (i.e. "Latest –w1" will set the date to the end of the previous week). Multiple dash codes can be used in one date function. You also have the benefit of setting up floating time periods.

Parameters:

- **Latest** - This will be yesterday's date as the current day's price will not have been collected yet. Latest can also be used in conjunction with the codes below by adding the codes onto the end of latest (e.g. Latest-m3)

- **For start dates only** use the chosen end date plus a dash code. In the start date field if users enter just a dash code (e.g.'-w3' rather than 'latest-w3') the system will use the user specified end date and apply the dash code logic to that to find the start date. E.g. If the end date is 'latest-w2' and the start date is just '–w3'. The start date would go back 3 weeks from the end date (i.e. it would go back 5 weeks in total]

  Examples below use a date of 12th April 2011 as the latest date. The actual date is the 13th April.

- **+/-D** - Goes forward/back the required number of working days, only includes Mon-Friday days.   E.g. Latest–d5 will go back to 5th April 2011. (For a start date API would show this as 6th April 2011).

- **+/-W** - Goes forward/back the required number of weeks and then to the previous Saturday point.   E.g. Latest–w1 would return the 2nd April 2011 (back one week to the 5th April (Tuesday) then go back to the prior Saturday. (For a start date API would show this as 3rd April 2011)

- **+/-M** - Goes forward/back the required number of Months and then to the previous Month end point.   E.g. Latest–m0 it would go back to 31st March 2011. (For a start date API would show this as 1st April)

- **+/-C** - Goes forward/back the required number of Calendar months to the same date in the month   E.g. Latest–c3 would go back to the 12th Jan 2011. (For a start date API would show this as 13th Jan)

- **+/-Q** - Goes forward/back the required number of quarters and then to the previous quarter end point   E.g. Latest-Q2 would go back to 30th Sep 2010. (For a start date API would show this as 1st Oct 2010)

- **+/-S** - Goes forward/back the required number of 6 month periods then to the previous Dec/June end point e.g. Latest-s1 would go back to 31st June 2010. (For a start date API would show this as 1st July 2010)

- **+/-X** - Goes forward/back the required number of years and then to the previous year end point   E.g.
  Latest-x4 would go back to 31st Dec 2006. (For a start date API would show this as 1st Jan 2007)

- **+/-Y** - Goes forward/back the required number of years and then to the previous month end point   E.g.
  Latest –y1 would go back to 31st March 2010. (For a start date API would show this as 1st April 2010)

- **+/-G** - Goes forward/back the required number of calendar years to the same point in the month   E.g.
  Latest –g1 would go back to 12th April 2010. (For a start date API would show this as 13th April 2010)

Manually Write Dash Codes in MSTS function

Example 1 (generated on 9/29/2011): when latest＝9/28/2011, start date＝9/1/2011, end date＝9/28/2011
＝MSTS("NAS:JGBAX","Return", "latest-m0", "latest","Dates＝True,Freq＝d,Days＝C,RType＝total")

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Example 2 (generated on 9/29/2011): when latest＝9/28/2011, start date＝1/1/2010, end date＝12/31/2010.
＝MSTS("NYS:MMM","Close", "ED-1X", "latest-0X","Dates＝True,Freq＝d,Days＝C,Fill＝B")

Example 3 (generated on 9/29/2011): when latest＝9/28/2011, start date＝4/1/2011, end date＝6/30/2011
＝MSTS("NAS:PHDAX","NAV_daily", "ED-1Q", "lqend","Dates＝True,Freq＝d,Days＝C")

Example 4: when end date is specified to be April 6, 2011 plus 6 working days, i.e. April 14, 2011.

=MSTS("NAS:VIFSX","NAV_daily","4/4/2011","4/6/2011+6d","dates=true,days=c")

Enter Dash Codes in Data Retriever Dialog

To enter dash codes in Data Retriever Dialog, choose the End Dash Codes option in the Start date and End date drop down. The default dash code of "End date" is latest. Therefore, if you do not add an End date, the default is latest.

Example 1 (generated on 9/29/2011): when latest=9/28/2011, API will return daily closing price of Microsoft from 8/29/2011 to 9/28/2011.

Example 2: use –0w as the End date which will take you back to the beginning of the current week and -2w as the Start date which will take you back to the start of two weeks ago.
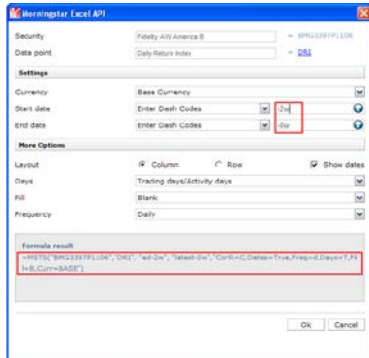
Use Dash Codes in MSDate Function

Dash code parameters can be used in MSDate function. When MSDates is referred to or included in MSTS as start date, API will automatically add one day for MSDate result and use it as start date for MSTS calculation.

Example 1 (generated on 9/29/2011): When lmktclose=9/28/2011, in MSTS start date=8/1/2011, end date=8/31/2011
MSTS("GOOG","close",A1,A2,"dates=true,days=c");
A1: =MSDATE("lmktclose-1m"); A2: =MSDATE("lmktclose-0m").

Example 2 (generated on 9/29/2011): When latest＝9/28/2011, in MSTS start date＝1/1/2010, end date＝12/31/2010.

MSTS("XXX:9146","total_ret", A1, A2,"Dates＝True,Freq＝m,Days＝T");

A1: ＝MSDATE("latest-3s"); A2: ＝MSDATE("latest-1s").

Example 3: When lsyend＝6/30/2011, in MSTS start date＝7/1/2010, end date＝6/30/2011.

＝MSTS("NAS:PASAX","NAV_daily", MSDATE("lsyend-2s"), MSDATE("lsyend"),"Dates＝True,Freq＝d,Days＝C")

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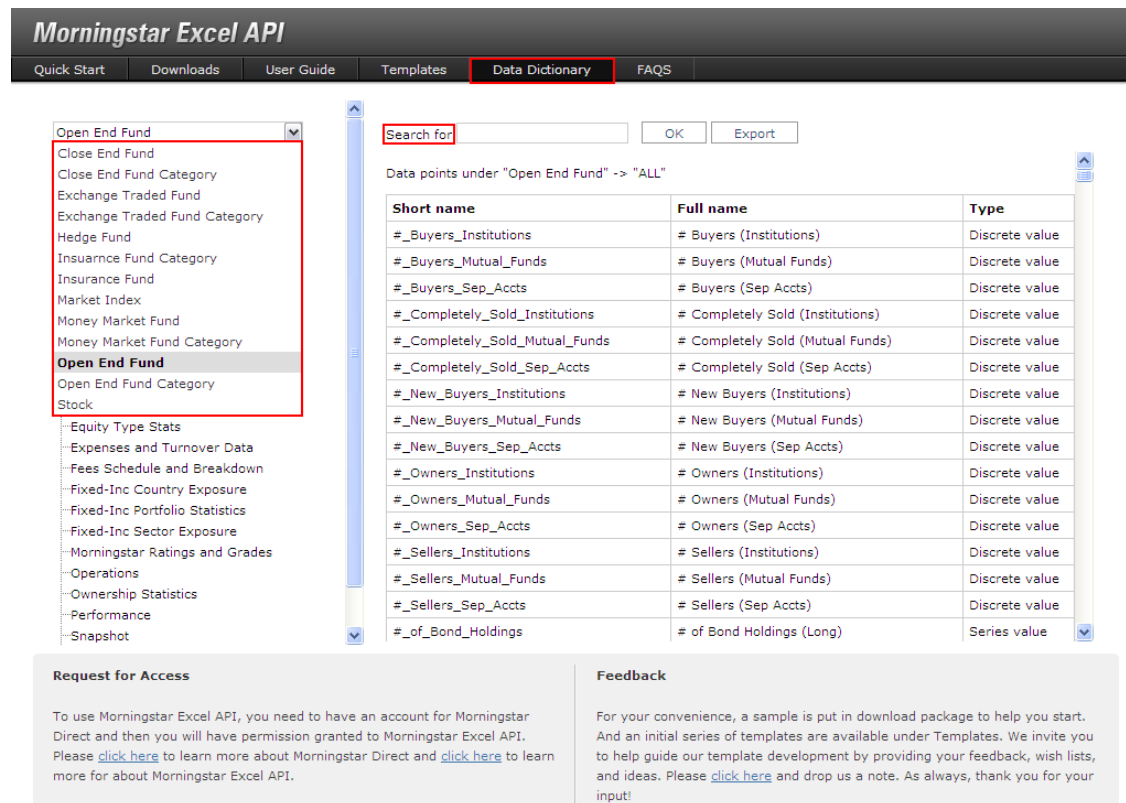
Learning tools

There are many tools to help you maximize the value of Morningstar Excel API. In addition to this user guide and the video provided on the first page, you have access to live sessions located in Morningstar Direct's training page as well as the data dictionary, templates, and FAQs located in Excel API landing page. Also, from the Morningstar Excel API add-in, you get easily get access to most of this information in addition to sending us feedback should you have any questions, concerns, or suggestions.

1. For example, go to your add-in and click on Data Dictionary.
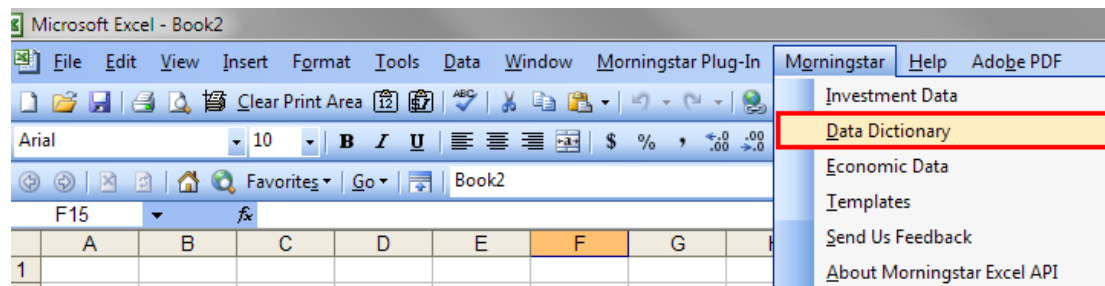
2. You will be taken to the Data Dictionary folder in the Morningstar Excel API landing page where you can build your knowledge of the available data points. Simply locate the universe or search for specific data point.

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3. Go back to the Morningstar add-in and this time, click on Templates.
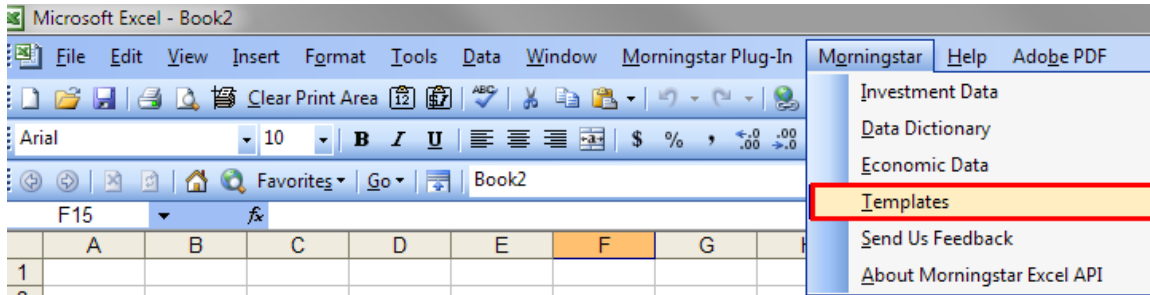
4. You will be taken to the Templates folder in the Morningstar Excel API landing page where you can utilize the templates to build your knowledge of Morningstar Excel API.
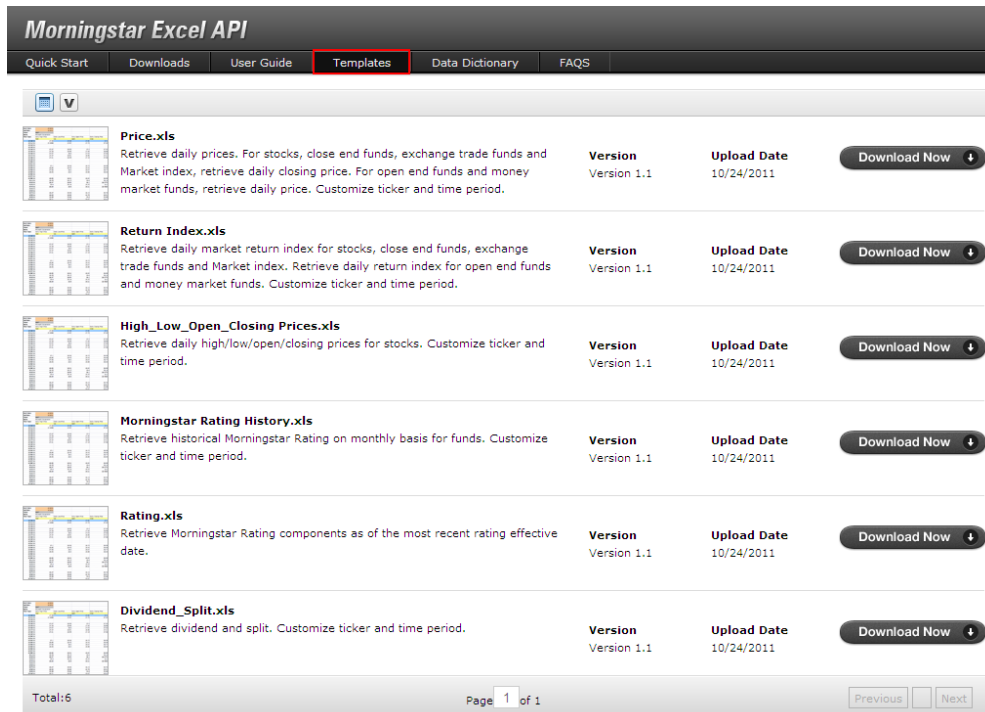
Templates (created in Microsoft Excel 2010)

- ▸ Asset Class Winners & Losers
- ▸ Correlation Matrix
- ▸ Best Month Worst Month Heatmap
- ▸ Year to Year Heatmap
- ▸ Fund Sheet
- ▸ Stock Sheet

Asset Class Winners & Losers Template
Click Here to Access the Template

Retrieve annual returns on 10 investments to visualize asset class fluctuations over time.

1. Be sure to install the latest version of Excel API (1.01.023), enable all macros, and open the attached file.
2. Log in with your Morningstar Direct credentials. "Ctrl + Alt + F9" will refresh the spreadsheet.
3. Enter your investments in the "Inputs" worksheet by entering a SecID, Ticker, or CUSIP into the cells in column B.
4. Once these investments have been entered, go back to the "Winners & Losers" worksheet.
5. Now press "Ctrl + Shift + R" to run a macro to sort the spreadsheet according to the investments entered.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Best	32.07	55.82	31.22	34.00	35.50	39.42	5.24	78.51	26.93	9.20
	14.24	38.59	25.55	25.55	32.14	32.67	1.51	37.21	18.88	7.84
	10.26	36.90	20.25	13.54	26.34	11.81	-9.70	31.78	16.71	6.05
	3.63	30.03	17.28	11.86	22.25	11.17	-36.85	30.81	15.51	2.64
	1.68	29.75	16.49	9.64	15.79	6.97	-37.00	26.46	15.06	2.11
	-6.17	28.83	11.77	7.05	10.49	6.45	-38.44	25.95	11.83	0.39
	-15.52	28.68	10.88	5.26	9.07	5.49	-40.07	19.69	9.03	0.06
	-15.94	20.72	6.30	4.91	5.06	4.77	-43.38	13.48	7.75	-1.18
	-22.10	4.10	4.34	3.34	4.33	-0.17	-46.49	5.93	6.54	-12.14
Worst	-27.88	1.05	1.43	2.43	-15.09	-18.15	-53.33	0.16	0.14	-18.42

Legend:
- S&P 500 TR
- Russell 1000 Growth TR USD
- Russell 1000 Value TR USD
- MSCI EAFE NR USD
- MSCI EM NR USD
- Barclays US Agg Bond TR USD
- JPM EMBI Plus TR USD
- S&P GSCI TR
- DJ US Real Estate TR USD
- USTREAS T-Bill Auction Ave 3 Mon

Correlation Matrix Template

[Click Here to Access the Template](#)

Retrieve 3 years of monthly returns on 20 investments to automatically create a correlation matrix containing conditional formatting. A red cell indicates high correlation and a blue cell indicates low correlation. Just enter tickers, SecIDs, or CUSIPs into the cells in column A.

Correlation Matrix
Start Date: 5/31/2009
End Date: 5/31/2012

Ticker	Name	Fidelity New Markets Income	PIMCO Emerging Markets Bond A	BlackRock World Income Inv A	Dodge & Cox Income	Calamos Market Neutral Income A	Artisan Small Cap Value Investor	T. Rowe Price Small-Cap Stock	Permanent Portfolio	Sequoia	Tweedy, Browne Global Value	Yacktman	Wasatch Small Cap Growth	Wells Fargo Advantage Growth A	Loomis Sayles Bond Admin	Oppenheimer Developing Markets A	Vanguard Emerging Mkts Stock Idx Adm	Goldman Sachs Commodity Strategy A	Harbor Commodity Real Return ST Adm	PIMCO Commodity Real Ret Strat A	Natixis ASG Global Alternatives A
FNMIX	Fidelity New Markets Income	1.000																			
PAEMX	PIMCO Emerging Markets Bond A	0.939	1.000																		
MDWIX	BlackRock World Income Inv A	0.659	0.690	1.000																	
DODIX	Dodge & Cox Income	0.695	0.939	0.815	1.000																
CVSIX	Calamos Market Neutral Income A	0.669	0.670	0.277	0.507	1.000															
ARTVX	Artisan Small Cap Value Investor	0.549	0.575	0.089	0.366	0.903	1.000														
OTCFX	T. Rowe Price Small-Cap Stock	0.531	0.547	0.078	0.343	0.892	0.976	1.000													
PRPFX	Permanent Portfolio	0.597	0.706	0.354	0.463	0.750	0.735	0.726	1.000												
SEQUX	Sequoia	0.582	0.601	0.133	0.383	0.873	0.920	0.898	0.712	1.000											
TBGVX	Tweedy, Browne Global Value	0.678	0.669	0.281	0.504	0.885	0.845	0.845	0.656	0.829	1.000										
YACKX	Yacktman	0.618	0.628	0.293	0.445	0.923	0.896	0.878	0.712	0.855	0.888	1.000									
WAAEX	Wasatch Small Cap Growth	0.539	0.545	0.053	0.323	0.885	0.930	0.966	0.683	0.857	0.834	0.832	1.000								
SGRAX	Wells Fargo Advantage Growth A	0.540	0.551	0.068	0.325	0.915	0.930	0.943	0.740	0.892	0.845	0.860	0.957	1.000							
LBFAX	Loomis Sayles Bond Admin	0.821	0.820	0.571	0.808	0.870	0.777	0.762	0.741	0.768	0.848	0.815	0.738	0.762	1.000						
ODMAX	Oppenheimer Developing Markets A	0.736	0.776	0.311	0.516	0.884	0.863	0.866	0.820	0.813	0.872	0.822	0.892	0.877	0.855	1.000					
VEMAX	Vanguard Emerging Mkts Stock Idx Adm	0.739	0.785	0.325	0.540	0.884	0.867	0.864	0.833	0.824	0.865	0.810	0.879	0.865	0.863	0.988	1.000				
GSCAX	Goldman Sachs Commodity Strategy A	0.496	0.518	0.093	0.240	0.793	0.728	0.701	0.723	0.768	0.701	0.688	0.710	0.774	0.660	0.746	0.758	1.000			
HCMRX	Harbor Commodity Real Return ST Adm	0.574	0.651	0.265	0.379	0.768	0.700	0.667	0.853	0.692	0.683	0.687	0.664	0.698	0.728	0.806	0.813	0.899	1.000		
PCRAX	PIMCO Commodity Real Ret Strat A	0.586	0.661	0.275	0.394	0.775	0.708	0.672	0.857	0.695	0.689	0.696	0.668	0.703	0.739	0.812	0.819	0.895	0.999	1.000	
GAFAX	Natixis ASG Global Alternatives A	0.585	0.602	0.314	0.548	0.843	0.716	0.711	0.745	0.743	0.793	0.712	0.702	0.764	0.817	0.812	0.823	0.779	0.766	0.767	1.000

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Best Month Worst Month Heatmap Template

Click Here to Access the Template

Retrieve historical monthly returns to visualize seasonal market trends. Just enter a ticker, SecID, or CUSIP in cell A1. Quickly identify best and worst months dating back over 20 years.

XIUSA04G92
S&P 500 TR

	January	February	March	April	May	June	July	August	September	October	November	December
2012	4.48	4.32	3.29	-0.63	-6.01							
2011	2.37	3.43	0.04	2.96	-1.13	-1.67	-2.03	-5.43	-7.03	10.93	-0.22	1.02
2010	-3.60	3.10	6.03	1.58	-7.99	-5.23	7.01	-4.51	8.92	3.80	0.01	6.68
2009	-8.43	-10.65	8.76	9.57	5.59	0.20	7.56	3.61	3.73	-1.86	6.00	1.93
2008	-6.00	-3.25	-0.43	4.87	1.30	-8.43	-0.84	1.45	-8.91	-16.79	-7.18	1.06
2007	1.51	-1.96	1.12	4.43	3.49	-1.66	-3.10	1.50	3.74	1.59	-4.18	-0.69
2006	2.65	0.27	1.24	1.34	-2.88	0.14	0.62	2.38	2.58	3.26	1.90	1.40
2005	-2.44	2.10	-1.77	-1.90	3.18	0.14	3.72	-0.91	0.81	-1.67	3.78	0.03
2004	1.84	1.39	-1.51	-1.57	1.37	1.94	-3.31	0.40	1.08	1.53	4.05	3.40
2003	-2.62	-1.50	0.97	8.24	5.27	1.28	1.76	1.95	-1.06	5.66	0.88	5.24
2002	-1.46	-1.93	3.76	-6.06	-0.74	-7.12	-7.80	0.66	-10.87	8.80	5.89	-5.87
2001	3.55	-9.12	-6.34	7.77	0.67	-2.43	-0.98	-6.26	-8.08	1.91	7.67	0.88
2000	-5.02	-1.89	9.78	-3.01	-2.05	2.47	-1.56	6.21	-5.28	-0.42	-7.88	0.49
1999	4.18	-3.11	4.00	3.87	-2.36	5.55	-3.12	-0.49	-2.74	6.33	2.03	5.89
1998	1.11	7.21	5.12	1.01	-1.72	4.06	-1.06	-14.46	6.41	8.13	6.06	5.76
1997	6.25	0.78	-4.11	5.97	6.09	4.48	7.96	-5.60	5.48	-3.34	4.63	1.72
1996	3.40	0.93	0.96	1.47	2.58	0.38	-4.42	2.11	5.63	2.76	7.56	-1.98
1995	2.59	3.90	2.95	2.94	4.00	2.32	3.32	0.25	4.22	-0.36	4.39	1.93
1994	3.40	-2.71	-4.36	1.28	1.64	-2.45	3.28	4.10	-2.45	2.25	-3.64	1.48
1993	0.84	1.36	2.11	-2.42	2.67	0.29	-0.40	3.79	-0.77	2.07	-0.95	1.21
1992	-1.86	1.30	-1.94	2.94	0.49	-1.49	4.09	-2.05	1.18	0.35	3.41	1.23
1991	4.36	7.15	2.42	0.24	4.31	-4.58	4.66	2.37	-1.67	1.34	-4.03	11.44
1990	-6.71	1.29	2.65	-2.49	9.75	-0.67	-0.32	-9.04	-4.87	-0.43	6.46	2.79
1989	7.32	-2.49	2.33	5.19	4.05	-0.57	9.03	1.95	-0.41	-2.32	2.04	2.40
1988	-1.86	1.30	-1.94	2.94	0.49	-1.49	4.09	-2.05	1.18	0.35	3.41	1.23
1987	13.47	3.95	2.89	-0.89	0.87	5.05	5.07	3.73	-2.19	-21.54	-8.24	7.61
1986	0.56	7.47	5.58	-1.13	5.32	1.69	-5.59	7.42	-8.27	5.77	2.43	-2.55
1985	7.79	1.22	0.07	-0.09	5.78	1.57	-0.15	-0.85	-3.13	4.62	6.86	4.84
1984	-0.56	-3.52	1.73	0.95	-5.54	2.17	-1.24	11.04	0.02	0.39	-1.12	2.63
1983	3.72	2.29	3.69	7.88	-0.87	3.89	-2.95	1.50	1.38	-1.16	2.11	-0.52
1982	-1.31	-5.59	-0.52	4.52	-3.41	-1.50	-1.78	12.14	1.25	11.51	4.04	1.93
1981	-4.18	1.74	4.00	-1.93	0.26	-0.63	0.21	-5.77	-4.93	5.40	4.13	-2.56
1980	6.22	-0.01	-9.72	4.62	5.15	3.16	6.96	1.01	2.94	2.02	10.65	-3.02
	January	February	March	April	May	June	July	August	September	October	November	December
Average	0.97	0.14	1.24	2.03	1.43	0.03	0.90	0.38	-0.69	1.28	1.97	1.84
Min	-8.43	-10.65	-9.72	-6.06	-7.99	-8.43	-7.80	-14.46	-10.87	-21.54	-8.24	-5.87
Max	13.47	7.47	9.78	9.57	9.75	5.55	9.03	12.14	8.92	11.51	10.65	11.44

Year to Year Heatmap Template

Click Here to Access the Template

Retrieve a matrix of returns to illustrate multiple holding periods of any investment. Just enter a ticker, SecID, or CUSIP in cell A2.

S&P 500 TR
XIUSA04G92

From the beginning of…

To the end of…	1/1/1994	1/1/1995	1/1/1996	1/1/1997	1/1/1998	1/1/1999	1/1/2000	1/1/2001	1/1/2002	1/1/2003	1/1/2004	1/1/2005	1/1/2006	1/1/2007	1/1/2008	1/1/2009	1/1/2010	1/1/2011
12/31/2011	7.70	8.09	6.47	5.45	3.70	2.00	0.55	1.48	2.92	6.16	3.63	2.64	2.26	-0.25	-1.64	14.12	8.40	2.11
12/31/2010	8.04	8.47	6.76	5.69	3.82	1.99	0.41	1.41	3.01	6.67	3.85	2.72	2.29	-0.83	-2.85	20.64	15.06	
12/31/2009	7.61	8.04	6.19	5.00	2.93	0.87	-0.95	0.00	1.60	5.52	2.09	0.42	-0.67	-5.63	-10.73	26.46		
12/31/2008	6.46	6.84	4.78	3.39	1.02	-1.38	-3.60	-2.89	-1.53	2.39	-2.19	-5.21	-8.36	-18.46	-37.00			
12/31/2007	10.53	11.27	9.31	8.15	5.91	3.65	1.66	3.30	6.08	12.83	9.18	8.63	10.53	5.49				
12/31/2006	10.92	11.76	9.67	8.42	5.96	3.42	1.13	2.94	6.19	14.74	10.44	10.23	15.79					
12/31/2005	10.52	11.40	9.07	7.63	4.79	1.77	-1.13	0.54	3.92	14.39	7.85	4.91						
12/31/2004	11.05	12.07	9.55	7.98	4.77	1.25	-2.30	-0.52	3.59	19.44	10.88							
12/31/2003	11.07	12.21	9.38	7.57	3.78	-0.57	-5.34	-4.05	0.12	28.68								
12/31/2002	9.26	10.30	6.87	4.40	-0.59	-6.78	-14.55	-17.16	-22.10									
12/31/2001	13.98	15.92	12.65	10.70	5.66	-1.03	-10.50	-11.89										
12/31/2000	18.25	21.33	18.32	17.20	12.25	4.89	-9.09											
12/31/1999	23.56	28.56	26.39	27.58	24.77	21.04												
12/31/1998	24.07	30.51	28.22	30.97	28.58													
12/31/1997	22.96	31.15	28.03	33.36														
12/31/1996	19.67	30.04	22.96															
12/31/1995	18.08	37.58																
12/31/1994	1.32																	

Yield Curve Template

Click Here to Access the Template

Retrieve dynamic yield curve and credit spread charts updated on a monthly basis.

Morningstar® Direct℠ **Excel API**
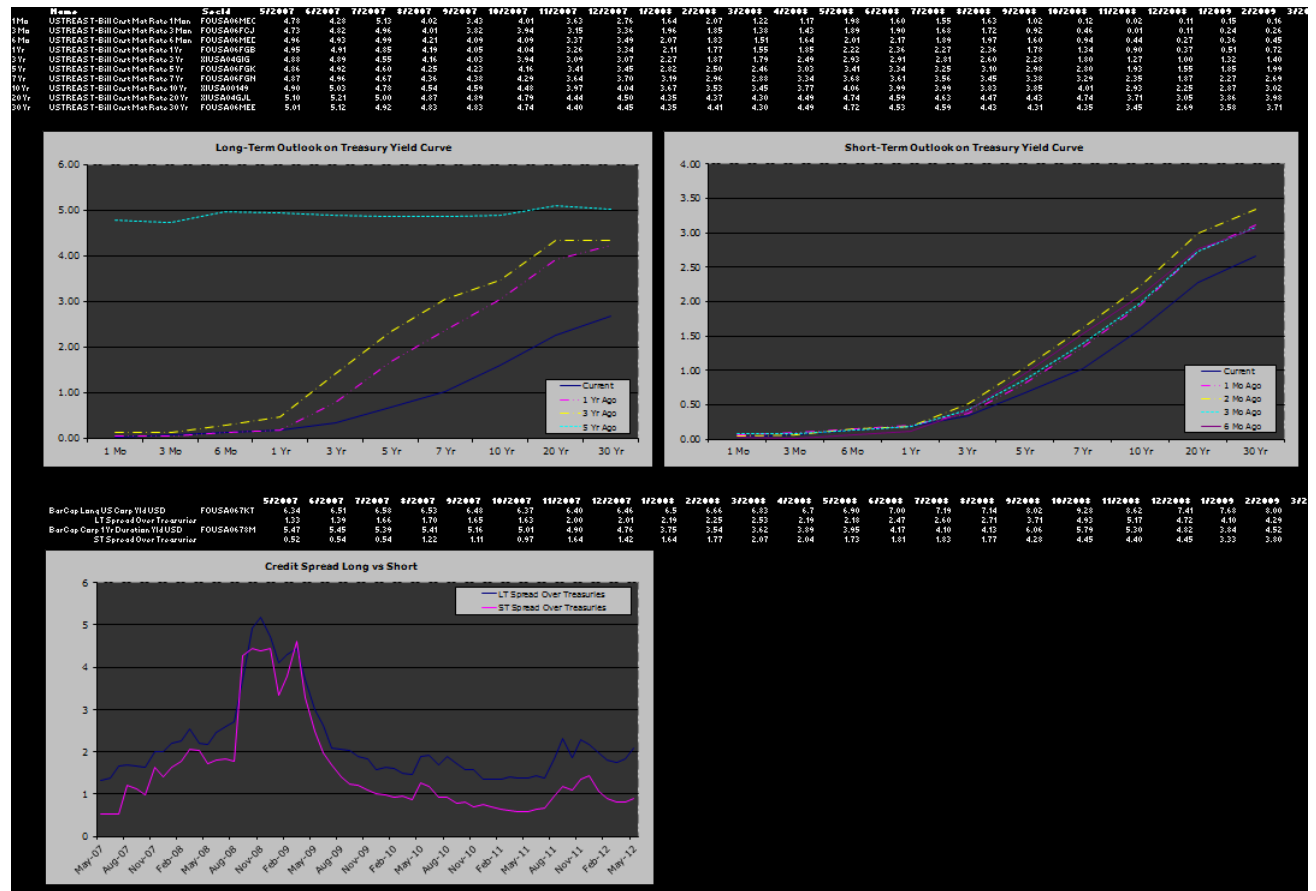
Fund Sheet Template

Retrieve managed portfolio content such as performance relative to benchmark, allocation, risk statistics, asset flows, and more. Just enter the ticker, SecID, or CUSIP into cell B1.

Morningstar® Direct℠ **Excel API**
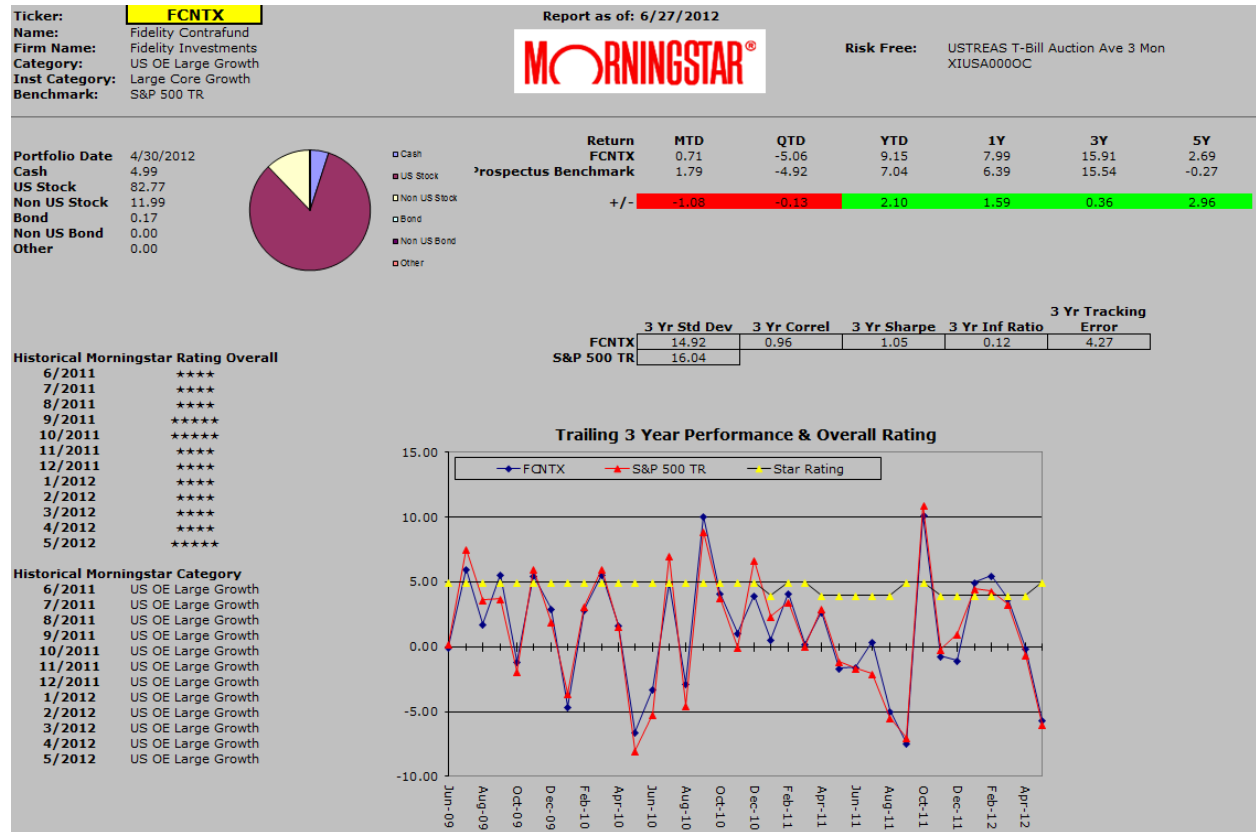
Stock Sheet Template

[Click Here to Access the Template](#)

Retrieve dynamic equity content including price, performance, balance sheet data, income statement data, cash flow statement data and more. Just enter the ticker, SecID, or CUSIP into cell B1.

		Exchange: NASDAQ		Report as of: 6/27/2012
Ticker:	**nas:aapl**			
Name:	Apple, Inc.			
CUSIP:	037833100	Business Country: United States		MORNINGSTAR®
Sector:	Technology	Industry: Technology		

	Current Price	52 Week High	52 Week High Date	52 Week Low	52 Week Low
Price	574.50	628.44	4/10/2012	332.04	6/27/2011
Fair Value Estimate	670.0				
Morningstar Rating	★★★★				
Stock Style	▥				
Current P/E	14.00539				
52 Week High P/E	17.58599				
52 Week High P/E	11.53				
Current P/B	5.24101				
52 Week High P/B	6.39450				
52 Week High P/B	4.19245				
Current P/S	3.80				
52 Week High P/S	4.54				
52 Week High P/S	2.97				
Current P/FCF	12.12151				
52 Week High P/FCF	15.38232				
52 Week High P/FCF	10.08685				
Market Cap (Mil)	537,193.1190				
Shares Outstanding (Mil)	935,062,000.00				
ROE % TTM	47.1011				
ROA % TTM	31.4166				
FCF/Share TTM	47.3951				
Total Assets	150,934,000,000.00				
Current Assets	50,712,000,000.00				
Total Liabilities	48,436,000,000.00				
Current Liabilites	32,036,000,000.00				
Cash/Total Assets %	22.3011				
Debt/Equity %	-N/A				
Sales per Employee	1,710,094.8				
Ex-Dividend Date	11/21/1995				
5 Yr Div Yield %	-N/A				
Forward Div Yield	-N/A				
Date of Last Split	2/28/2005				

Trailing Mo Volume

1/2012	2/2012	3/2012	4/2012	5/2012
13,996,855.0	34,000,054.0	26,108,485.0	18,076,434.0	17,568,229.0

Annual EBITDA

2007	2008	2009	2010	2011
4,409,000,000.00	6,275,000,000.00	11,740,000,000.00	18,385,000,000.00	33,790,000,000.00

Free Cash Flow

2007	2008	2009	2010	2011
4,484,000,000.00	8,397,000,000.00	8,946,000,000.00	16,474,000,000.00	30,077,000,000.00