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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	 Copy extracted files into "%appdata%/Microsoft/AddIns" folder. Specifically, ope address has then the tasket folder annears 	in "Hy computer", and type "sappdata's Microsoft Addins in
Workspace	¢	3

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*.

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3. You will be taken to the File Download window. Click Run.

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While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. <u>What's the risk?</u>	

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.

$\label{eq:example 1: for single security with single data point$

=MSDP("GOOG"," Base_CUR")

=MSDP("A2",	"B1")
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Example 2: for single security with multiple attributes

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

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Example 3: for multiple securities with multiple data points =MSDP(\$A2, B\$1)

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3	JGBAX	United States United States	Janus Capital Management LLC	1.00	0.60

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","Imktclose")

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.

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

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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**")

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1	3/1/2011	3/2/2011	3/3/2011	3/4/2011	3/5/2011	3/6/2011	3/7/2011	3/8/2011	3/9/2011	3/10/2011	3/11/2011	3/12/2011	3/13/2011	3/14/2011
2	-0.933	0.087	4.037	-0.708	0.000	0.000	-7.510	-3.645	0.441	-0.458	0.283	0.000	0.000	14.009
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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=XIUSA0000C,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; XIUSA0000C is ID of USTREAS T-Bill Auction Ave 3 Mon;

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6	2011-04	-01 t	o 2011	-12-31	-11.81									
7	2011-07	'-01 t	o 2012	-03-31	-12.05									
8	2011-10	-01 t	o 2012	-06-30	-5.10									
9	2012-01	-01 t	o 2012	-09-30	-8.07									
10	2012-04	-01 t	o 2012	-12-31	-14.02									

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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2	4/5/2011	101.41							
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4	4/7/2011	101.52							
5	4/8/2011	101.12							
6	4/11/2011	100.83							
7	4/12/2011	100.05							

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")

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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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З	2/3/2010	70.12									
4	2/4/2010	68.16									
5	2/5/2010	66.66									
6	2/8/2010	66.35									
7	2/9/2010	68.04									
8	2/10/2010	67.64									
9	2/11/2010	67.80									
10	2/12/2010	67.95									
11	2/16/2010	69.85									
12	2/17/2010	70.10									
13	2/18/2010	71.78									
14	2/19/2010	72.61									
15	2/22/2010	72.57									
16	2/23/2010	71.81									
17	2/24/2010	72.60									
18	2/25/2010	72.20									
19	2/26/2010	72.55									

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

	Aicrosoft Ex	xcel - Exce	l API Demo	2.xls			
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	A1	•	∱√ =MSTS	("NYS:GD"	', "close", "X	2010Q1","C)ates=True")
	A	В	С	D	E	F	G
1	1/4/2010	69.19					
2	1/5/2010	69.30					
3	1/6/2010	69.24					
4	1/7/2010	69.44					
58	3/26/2010	76.92					
59	3/29/2010	78.48					
60	3/30/2010	77.49					
61	3/31/2010	77.2					

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

N	Microsoft Excel - Excel API Demo 2.xls									
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	A1	•	🏂 =MSTS	("NYS:GD"	, "close", "	2010s1","D	ates=True")			
	A	В	С	D	E	F	G			
1	1/4/2010	69.19								
2	1/5/2010	69.30								
3	1/6/2010	69.24								
4	1/7/2010	69.44								
5	1/8/2010	69.44								
6	1/11/2010	70.73								
7	1/12/2010	70.30								
122	6/28/2010	62.26								
123	6/29/2010	59.43								
124	6/30/2010	58.56								

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	C for the next cell in the same column
COIN	vertically or horizontally	R for the next cell in the same row
Datas	Chow the detector pat	True for show the dates
Dates	Show the dates or not	False for hide the dates
		D for daily
		W for weekly
		M for monthly
Freq	Base frequency of retuned data	Ω for quarterly
		S for semi annually
		Y for yearly
		1 for day to day return
	Typically used to indicate whether to return values	C for returning data of all calendar days
Days		W for returning data week days
	database or week days	T for returning data trading days
		C for carrying over the last available data
C 'II	Designed to deal with days without real values,	P for carrying over the previous day's data
Fill	like a non-trading days	B for showing blank
		0 for filling 0
0		The three letter ISO currency code, in quotation marks, i.e.,
Curr	Currency of the returned data	"EUR" for Euro.
Scale	Reduce result 10x times	0, 00, 000, 000,000, etc
		B2P for Bid Price Return
		B2B for Bid-Bid Return
	Apply only to rature data points indicate rature	gross for Gross Return
	Apply only to return data points, indicate return type. Default value for Italy and UK mutual fund is	income for Income Return
	post tax return; for other domiciled mutual fund is	investor for Investor Return
rType	total retum; For closed ends, ETF, stocks and	market for Market Return
	market index are market return; for money market	net for Net Return
	fund is total return; for separate account is gross	O2B for Offer Bid Return
	retum.	post_tax for Post-Tax Return
		price for Price Return
		total for Total Return
	Retrieve annualized or not annualized day to day	False for not annualized day to day return
Ann	retum.	True for annualized day to day return
Source	Source data used to calculate the target custom ca	
Benchmark	Benchmark used to calculate the selected custom of	
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("Imktclose")

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	Imktclose
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")

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	A1		•	fx	= MSDA	TE("lye	nd")					
		A		В			D					
1	1 12/31/2010											
2												

Example 2: to retrieve the date for last quarter end

= MSDATE("lqend")

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	A1		•	fx	= N	/ISDAT	FE("lqe	end")				
	A			В		С		D				
	9/30/2011											
1		9/30/2	011									

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.

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.					

Additional parameters are offered to meet more needs. The table below shows all additional parameters.

Example 1: to retrieve latest holdings

=MSHOLDING("FOUSA00CJ8","ISIN")

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1	ISIN	Name		Weight			
2	GB0001883718	Charles Taylor Pl	.C	0.05			
3	US1152361010	Brown & Brown,	Inc.	1.16			
4	BMG9319H1025	Validus Holdings	, Inc.	5.55			
5	LU0490650438	Flagstone Reinsu	irance Holdin	0.31			
6	GB00B5BT0K07	Aon plc		5.24			
7	BRBRINACNOR3	Brasil Insurance	Participacoes	2.38			
8	US0846707026	Berkshire Hatha	way Inc Class	17.75			
9	BMG3223R1088	Everest Re Grou	o, Ltd.	0.40			
10	KYG4095J1094	Greenlight Capit	al Re, Ltd.	0.26			
11	BRGPIVBDR003	GP Investments	Ltd.	0.10			
12	BMG7496G1033	Renaissance Re	Holdings, Ltd.	0.34			
13	US5717481023	Marsh & McLenn	an Companie	1.74			
14	GB0005203376	Jardine Lloyd Th	ompson Grou	0.55			
15	US7443201022	Prudential Finan	cial Inc	6.08			
16	KR7005830005	Dongbu Insurand	e	0.77			
17	US0846701086	Berkshire Hatha	way Inc Class	0.45			
18	BMG0692U1099	Axis Capital Hold	lings Ltd	2.84			
19	BMG621851069	Montpelier RE H	oldings Ltd	2.80			
20	CH0121032772	Allied World Ass	urance Comp	5.10			
21	JE00B64G9089	Beazley PLC		3.33			
22	US91529Y1064	Unum Group		0.64			
23	US0268741560	Amer Intl Grp ([\	Vts/Rts])	0.42			
24	CH0044328745	ACE Ltd		7.39			
	KR7003690005	Korean Reinsura		0.01			

Example 2: to retrieve market value of latest holdings

=MSH0LDING("GSSMX","ISIN","market value=true")

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					-			-
	A		В			С	D	
1	ISIN	Name			Mark	et Value		
2	BMG053841059	Aspen Insurar	nce Holdings Lt	d.	7	,846,446.0	D	
3	US2296631094	CubeSmart			13	,675,504.0	D	
4	US3498821004	Fossil, Inc.			10	,482,512.0	D	
5	US00738A1060	Adtran, Inc.			12	,877,977.0	D	
6	US12709P1030	Cabot Microe	ectronics Corp	oration	14	,696,990.0	D	
7	US87817A1079	Team Health I	Holdings Inc		16	,222,889.0	D	
8	US8536261097	Standard Micr	osystems Corp	oration	17	,939,784.0	D	
9	US88362T1034	Thermon Grou	up Holdings Inc	0	10	,307,863.0	D	
10	US92849E1010	Vitamin Shop	pe, Inc.		7	,748,819.0	D	
11	US4130861093	Harman Intern	national Indust	tries, Inc.	16	,600,698.0	D	
12	US55306N1046	MKS Instrume	nts, Inc.		16	,977,447.0	D	
13	US57722W1062	Mattress Firm	Holding Corp		14	,481,742.0	D	
14	US78401V1026	SCBT Financia	l Corporation		10	,029,017.0	D	
15	US0185223007	ALLETE, Inc.			6	,710,136.0	D	
16	US00508X2036	Actuant Corp	Class A		9	,432,041.0	D	
17	US7429621037	PrivateBancor	p Inc		14	,330,037.0	D	
18	US55272X1028	MFA Financia	, Inc.		27	,072,744.0	D	
19	US8318652091	A.O. Smith Co	rporation		18	,427,297.0	D	
20	US3207341062	First of Long Is	sland		3	,808,288.0	0	

Example 3: to retrieve number of shares and currency of latest holdings

=MSH0LDING("F0USA00CJA;F0", "Ticker", "shares=true,curr=true")

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	A	В	С	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		
LO	LOW	Lowe's Companies Inc.	USD	2,033,400		
1	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		
L4	TGT	Target Corp	USD	233,421		
15	SUSS	Susser Holdings Corporation	USD	37,228		
16	GIII	G-III Apparel Group, Ltd.	USD	389,500		
.7	HD	Home Depot, Inc.	USD	770,200		
18	ROST	Ross Stores, Inc.	USD	394,200		
19	м	Macy's Inc	USD	74,754		
20	LTD	Limited Brands, Inc.	USD	634,198		
	XLT	TJX Companies	USD	872,400		

Example 4: to retrieve historical holdings

=MSH0LDING("F0USA00EMV;F0","CUSIP","1/1/2011","12/31/2011")

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-	A1	✓	MV;FO","CUSIP"	"1/1/2011","1	2/31/2011")		
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L	CUSIP	Name	1/31/2011	2/28/2011	3/31/2011	4/30/2	201
2	649906MB7	New York St Dorm Auth 5%	0.16	0.16	0.16		0.1
3	677525TF4	Ohio St Air Quality Dev Auth 5.625%	0.07	0.06	0.06		0.0
:	64988TEB0	New York St Mun Bd Bk Agy Spl Rev 5.25%	0.43	0.43	0.43		0.4
j	04780MMN6	Atlanta Ga Arpt Rev General R 6%	0.48	0.49	0.50		0.5
5	769369AL3	Riverton Utah Hosp Rev Rev Bds 5%	0.20	0.20	0.20		0.2
7	118217AT5	Buckeye Ohio Tob Settlement Fi Toba 6.5%	0.41	0.41	0.42		0.4
3		USTREAS T-Bill Cnst Mat Rate 5 Yr	-0.01	-0.01	-0.01	-	0.0
)	1307954K0	California Statewide Cmntys De Rev Re 5%	0.37	0.37	0.38		0.3
0	185072DL6	Clearview N J Regl High Sch Di Re 5.375%	0.17	0.17	0.16		0.1
1	452252CZ0	Illinois St Toll Hwy Auth 5%	0.66	0.66	0.67		0.6
2	4423483V8	Houston Tex Arpt Sys Rev Senior Li 5.5%	0.13	0.13	0.13		0.1
3	452227DN8	Illinois St Sales Tax Rev Build III 5%	0.30	0.30	0.30		0.3
4	199010AC3	Columbus-Citation Hsg Corp Ohi Mt 7.625%	0.19	0.19	0.19		0.1
5	74529JLX1	Puerto Rico Sales Tax Fing Cor Sales 5%	0.10	0.09	0.08		0.0
6	955070AC1	West Palm Beach Fla Cmnty Rede Tax In 5%	0.12	0.12	0.12		0.1
7	176553ET8	Citizens Ppty Ins Corp Fla Senior 5.25%	0.14	0.14	0.14		0.1
8	66285WGT7	North Tex Twy Auth 5.5%	0.14	0.14	0.14		0.1
9	052476TP3	Austin Tex Wtr & Wastewater Sy Wt 5.125%	0.29	0.29	0.29		0.2
0	596126BT8	Middleburg Heights Ohio Hosp R Ref 5.25%	0.10	0.10	0.09		0.0
1	67766YAB4	Ohio St Wtr Dev Auth 5.15%	0.10	0.09	0.08		0.0
2	48543BNQ7	Kansas St Dev Fin Auth 5,125%	0.06		0.03		0.0

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")

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	A	В	С	D	E	F	G	Н	I	J	
1	ISIN	Name	1/31/2012	2/29/2012	3/31/2012	4/30/2012	5/31/2012				
2	US35471R1068	Franklin Street Properties	47,893	55,674	65,720	62,434	60,512				
3	US8561901039	State Bank Financial Corp	46,371	37,352	33,269	25,875	8,425				
4	US41902R1032	Hatteras Financial Corpora	74,952	76,896	75,330						
5	JP3359600008	Sharp Corporation	12,049	9,851	10,216	8,956	7,343				
6	US2518931033	DeVry, Inc.	302,080	284,240	270,960	250,770					
7	FR0000120222	CNP Assurances	3,222	3,445	3,729	3,353	2,589				
8	ES0148396015	Industria De Diseno Textil	26,697	28,257	29,311	27,523	25,314				
9	GB00B5SXPF57	Essar Energy PLC	407	334	497	476					
10	SG1R50925390	SEMBCorp Industries Ltd.	5,700	6,345	6,300	6,093	5,622				
11	PTCPR0AM0003	Cimpor - Cimentos de Por	1,974	1,987	1,954	2,141	2,003				
12	FR0000064578	Fonciere des Regions	2,578	2,828	3,133	3,023	2,513				
13	CH0010570767	Chocoladefabriken Lindt 8	5,779	6,135	6,425	6,522	5,801				
14	AT0000720008	Telekom Austria AG	5,326	5,320	5,322	5,012	4,211				
15	JP3298600002	Cosmo Oil Company Limite	2,913	2,915	2,779	2,773	2,527				
16	US00738A1060	Adtran, Inc.	65,797	38,775	15,595						
17	NO0010215684	Aker Solutions ASA	3,005	4,250	4,145	4,163	3,238				
18	NL000008977	Heineken Holding NV	6,545	7,230	7,584	7,501	6,554				
19	US69888P1066	Par Pharmaceutical Compa	119,163	122,463	127,809	139,722	118,272				
	JP3686800008	Nippon Sheet Glass Co., Lt	2,020	1,673	1,534	1,295					

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.

Example 1: to retrieve IDs of members for an investment list

=MSMEMBER("L", "ITALY TEST FUNDS", "ISIN")

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	A	В	С	D	E	F	G
1	LU0066902890						
2	LU0066902890						
3	IT0003256408						
4	IE0000828933						
5	LU0066902890						
6	LU0300746616						
7	LU0066902890						
8	LU0254986077						
9	LU0267983889						
10	LU0215049551						
11	LU0058908533						
12	LU0229946545						
13	LU0254982241						
14	LU0388708587						
15	IT0004169212						

Example 2: to retrieve IDs of members for a search

=MSMEMBER("S", "5 STAR", "SecId", "CORR=R")

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AI	• (=	Jx =IVIS	MEMBER("S	","5 STAR","	Secid","CO	KK=K")	
AI	• (=	Jx =IVIS	MEMBER("S	","5 STAR","	Secid","CO	RR=R")	
AI	B	J* =WIS	D	","5 STAR"," E	Secid","CO	G G	H
	В	С	D	E	F		
A	В	С	D	E	F	G	
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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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File	Home	Insert	Page Layout	Formula	s Data	Review	View	Add-Ins
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Inve	estment Dat	a						
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<u>E</u> co	nomic Data							
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Abo	out Morning	gstar Excel A	PI					
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2								

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 subtabs 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

Morningstar Excel API			×	Morningstar Excel API			×
Securities Portfolio Mana	agement			Securities Portfolio Mana	gement		
Attributes/Time Series	Holdings Identifiers		_	Attributes/Time Series	Holdings		
Security	Microsoft Corporation	= NAS:MSFT		Object	Accounts		~
Data point	Return	= <u>Return</u>		Accounts	ETF Portfolio		~
Settings				Data point	Beta	= <u>Beta</u>	
Currency	Base Currency		~	Settings			
Start date	1 month ago	12/25/2012		Currency	Base Currency		~
End date	Last Market Close	1/24/2013		Start date	3 years ago	▶ 1/1/2010	
More Options				End date	Last Month End	12/31/2012	
Layout		Show d	ates	More Options			
Days	Trading days/Activity days		~	Layout	Column ○ Row Column Col	Show	v dates
Fill	Blank		~	Source data	Monthly Return		~
Frequency	Day to Day		~	Benchmark		-	
Return type	Market	M Annua	alize	Risk-free proxy		=	
				Compounding method	Standard	¥	
				Rolling window		months	
				Window shift		months	
				T Annualize			
Formula result =MSTS("NAS:MSFT","Return", T,Fill=B,Curr=BASE,RType=Ma	"12/25/2012", "1/24/2013","CorR=C,Date arket,Ann=False")	ss=False,Freq=1,Days	-		A898-B497382CB9B9;UA","Beta", "1/ 10,Comp=S,Fill=B,Curr=BASE")	1/2010", "12/31/2012"	,"Cor
		Ok Can	cel			Ok C	Cancel

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

Parameters	Description
Socurity.	Available under Securities tab; Find specific security by name, ticker or ISIN; An
Security	auto look-up.
Object	Available under Portfolio Management tab; Select the target object, accounts,
Object	models portfolios or custom benchmarks.
Accounto	Available under Portfolio Management tab; Select accounts, models portfolios
Accounts	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.
Diale frage prover**	Find the Risk-free proxy to calculate the custom calculation data; An auto look-
Risk-free proxy**	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 Annual	ized are activated when using return datapoints.
**Source, Benchmark, Be	nchmark, Risk-free proxy, Compounding method, Rolling window and are

activated when using custom calculation datapoints.

Holdings

Holdings sub-tab is applicable for MSHOLDING function.

	olio Management		Securities Portfoli	o Management	
Attributes/Time Ser	ies Holdings Identifiers		Attributes/Time Serie	s Holdings	
Security	Vanguard 500 Index Admiral	= NAS:VFIAX	Object	Model Portfolios	[
Position ID	ISIN	*	Model Portfolios	Elevate - Adventurous	[
Settings			Position ID	Ticker	~
Start date	1 year ago	1/1/2012	Settings		
ind date	Last Month End	12/31/2012	Start date	1 year ago 💌	1/1/2012
More Options			End date	Last Month End	12/31/2012
olding type	C Stocks C Bonds	© All	More Options		
Data type	• Weight(%)	lue C Number of shares	Holding type	C Stocks C Bonds	 All
requency	All	✓ ✓ Show name	Data type	Weight(%) Market value	O Number of shares
			Frequency	All	Show nar
	AX", "ISIN", "1/1/2012", "12/31/2012", "Freq	-A,HT=all,weight=true,name	Formula result =MSHolding(*58902D03	-7236-4874-82DF-C75C9F967B82;MD*, "TICKE	R", "1/1/2012", "12/31/;
=MSHolding("NAS:VFI	AX", "ISIN", "1/1/2012", "12/31/2012", "Freq	=A,HT=all,weight=true,name			R", "1/1/2012", "12/31/2
=MSHolding("NAS:VFI	AX", "ISIN", "1/1/2012", "12/31/2012", "Freq.	=A,HT=all,weight=true,name	=MSHolding("5B902D03		R", "1/1/2012", "12/31/2
Formula result =MSHolding("NAS:VFI =true")	AX", "ISIN", "1/1/2012", "12/31/2012", "Freq.	=A,HT=all,weight=true,name	=MSHolding("5B902D03		R", "1/1/2012", "12/31/2

Parameters	Description
Socurity	Available under Securities tab; Find specific security by name, ticker or ISIN; An
Security	auto look-up.
Object	Available under Portfolio Management tab; Select the target object, accounts,
Object	models portfolios or custom benchmarks.
Accounts	Available under Portfolio Management tab; Select accounts, models portfolios
Accounts	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.

Identifiers

Identifiers sub-tab is applicable for MSMEMBER function.

Morningstar Excel API		×		
Securities Portfoli	o Management			
Attributes/Time Serie	s Holdings Identifiers			
Source	Investment list	~		
List/Search name	Sample-US OE	~		
Settings				
Security ID	ISIN	~		
Layout	⊙ Column C Row			
			Parameters	Description
			Parameters Source	Description select from investment list or search.
				select from investment list or search.
Formula result			Source List/Search	
	E-US OE","ISIN","CORR=C")		Source	select from investment list or search.
	E-US OE", "ISIN", "CORR=C")		Source List/Search name	select from investment list or search. select name of investment list or search.
	E-US OE", "ISIN", "CORR=C")	Ok Cancel	Source List/Search name Security ID	select from investment list or search. select name of investment list or search. select from ISIN, Ticker, CUSIP or SecID.

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.

Morn	ningstar Excel	АРІ				×
Indic	ators					
	dicator Nam	ne.				
	DEU:CPI 9					A
-	DEU:CPI %					
	DEU:CPI %					
		Inified Germany,A				
		Inified Germany,M				
	DEU:CPI L	Inified Germany,Q				=
	DEU:CPI V	Vest Germany,A				
	DEU:CPI V	Vest Germany,M				
	DEU:CPI V	Vest Germany,Q				
	DEU:Cons	truction Prices,Original Data	,Construction Price I	ndex,Quartly		
	DEU:Cons	umer Price Index,Food,SA,M	Ionthly			
	DEU:Cons	umer Price Index,Original D	ata,Energy,Monthly			
	DEU:Cons	umer Price Index,Original D	ata,Food,Monthly			
	DEU:Cons	umer Price Index,Original D	ata,Goods,Excluding	Food (Other Du	urable And Non Durable Consu	mer Goods)
	_	Energy 1),Monthly				
		umer Price Index,Original D		_		
		umer Price Index,Original D ts 3 selected	ata,Services,Excludi	ng Housing Ren		1 2 3 Next Last
					First Prev	1 2 5 Wext Last
-	Criteria	Settings				
Sear	rch criteria	I		Optional cri	teria	
Coun	ntry	Germany	~	Location		
Conc	cept	Inflation & Price	~	Name		
Cate	gory	Consumer Price	~	Frequency		~
						Go Clear
						Ok Cancel

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.

	xcel API				X						
Indicators											
Indicator	Name										
🔽 🔻 DEU:C	PI %,A										
=MSTS("F	000004J4U;EC","Value"	, "7/1/2009", "6/30/2	012","Freq=Y,CorR=	=C,Dates=False,Days=C,Fill=B")							
🔽 🔻 DEU:C	PI %,M										
=MSTS("F	000004J4V;EC","Value"	, "7/1/2009", "6/30/2	012","Freq=M,CorR	=C,Dates=False,Days=C,Fill=B")							
▼ DEU:C	PI %,Q										
=MSTS("F	=MSTS("F0000057SV;EC","Value", "7/1/2009", "6/30/2012","Freq=Q,CorR=C,Dates=False,Days=C,Fill=B")										
3 selected											
3 selected	ia Settings										
_	ia Settings		More Opti	ons							
Criter	ia Settings		More Opti	ons ⊙ Column C Row	Show dates						
Criter Settings		7/1/2009			Show dates						
Criter Settings Display	Show Value	▼ 7/1/2009▼ 6/30/2012	Layout	⊙ Column O Row							
Criter Settings Display Start date	Show Value 3 years ago		Layout	Column C Row Calendar days	~						

Once complete with your settings, click OK and your result will be displayed in Excel.

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Morn	ingstar Plug	-In *														
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	A1	• (=	f _x	=MSTS("NAS	:MORN","	Return", "6	5/28/2012'	', "7/27/2)12","CorR:	=C,Dates=F	alse,Freq=1,D	ays=T,Fill=B	,Curr=BASE,	RType=Mark	et,Ann=Fal	lse")
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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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	nu Commands	1								_
1	Jx =N			_		latest","Da				e=tota
4	A	8	C	D	E	F.	G	н	11	<u></u>]
1	9/1/2011	0.10								
2	9/2/2011	0.40								
3	9/3/2011	0								
4	9/4/2011	0								
5	9/5/2011	0								
6	9/6/2011	-0.56								
7	9/7/2011	0.19								
8	9/8/2011	-0.27								
9	9/9/2011	-0.18								
10	9/10/2011	0								
11	9/11/2011	0								
12	9/12/2011	-0.19								
13	9/13/2011	-0.09								
14	9/14/2011	0.01								
15	9/15/2011	-0.09								
16	9/16/2011	0.02								
17	9/17/2011	0								
18	9/18/2011	0								
19	9/19/2011	0.20								
20	9/20/2011	0.10								
21	9/21/2011	-0.28								
22	9/22/2011	0.10								
23	9/23/2011	-0.46								
24	9/24/2011	0								
25	9/25/2011	0								
26	9/26/2011	-0.37								
27	9/27/2011	-0.38								
28	9/28/2011	-0.09								

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

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Me	Menu Commands										
6	f _×	MSTS("NYS:M	MM"."Clos	e". "ED-1X"	. "latest-	DX"."Dates	=True.Freq	=d.Davs=0	.Fill=B")		
	A	В	С	D	E	F	G	н	<u>· · · · · · · · · · · · · · · · · · · </u>		
1	~	U	C	U			0				
2											
3	Г	1/1/2010									
4		1/2/2010									
5		1/3/2010									
6		1/4/2010	83.02								
7		1/5/2010	82.50								
8		1/6/2010	83.67								
9		1/7/2010	83.73								
10		1/8/2010	84.32								
11		1/9/2010	51102								
12		1/10/2010									
13		1/11/2010	83.98								
14		1/12/2010	84.05								

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", "Iqend","Dates=True,Freq=d,Days=C")

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Me	Menu Commands									
9	<i>f_x</i> =N	ISTS("NAS	S:PHDAX","N	AV_dail	γ", "ED	-1Q",	"lqend","	Dates=True	,Freq=d,Da	ays=C")
4	А	В	С	D	E		F	G	Н	1
1	4/1/2011	9.46								
2	4/2/2011									
3	4/3/2011									
4	4/4/2011	9.48								
5	4/5/2011	9.48								
6	4/6/2011	9.49								
7	4/7/2011	9.49								
8	4/8/2011	9.5								
9	4/9/2011									
10	4/10/2011									
11	4/11/2011	9.50								
12	4/12/2011	9.49								
13	4/13/2011	9.49								
14	4/14/2011	9.49								
15	4/15/2011	9.50								
16	4/16/2011									
17	4/17/2011									
18	4/18/2011	9.49								
19	4/19/2011	9.49								

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")

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Me	nu Commands								
0	f _x =N	ISTS("NAS	:VIFSX","N	IAV_daily"	,"4/4/2011	.","4/6/201	1+6d","dat	es=true,da	ays=c")
	А	В	С	D	E	F	G	Н	1
1	4/4/2011	101.43							
2	4/5/2011	101.41							
3	4/6/2011	101.67							
4	4/7/2011	101.52							
5	4/8/2011	101.12							
6	4/9/2011								
7	4/10/2011								
8	4/11/2011	100.83							
9	4/12/2011	100.05							
10	4/13/2011	100.08							
11	4/14/2011	100.09							
12									

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.

Morningstar Excel API	E
Security	Microsoft Corporation = NAS:MSFT
Data point	Daily Closing Price = Close
Settings	
Currency	Base Currency
Start date	Enter Dash Codes 💽 latest-1c 😡
End date	Enter Dash Codes 💌
More Options	
Layout	Column ○ Row Show dates Show dates Column ○ Row Column ○
Days	Trading days/Activity days
Fill	Blank
Frequency	Daily
Formula result =MSTS("NAS:MSFT", "Clo Curr=BASE")	sse", "latest-1c", "latest","CorR=C,Dates=True,Freq=d,Days=T,Fill=B,
	Ok Cancel

Example 2: use –Ow 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.

Security	Fidelty AW America ()	- #PEGX797P1106
Deta point	Daily Return Index	- DB2
Settings		
Currency	Base Currency	
Start date	Enter Dash Codes	s 🖓 😡
Ind date	Enter Cash Codes	el ew 😡
More Options		
Layout	G Column C Row	P Show date
Treyle	Trading days/Activity days	
-	Blank	
requercy	Daily	6
Formula result «HSTS("BHGSSS70 I+B.Carr+BASE")	104", 'DRP, "ed Ow", "latest-dw", 'Co-R-C, Date	a-Tria Preg-d Dave-T _i N
		Ok Cancel

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 Imktclose=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("Imktclose-1m"); A2: =MSDATE("Imktclose-0m").

9	Home 1	nsert Page La	ryout Fa	moles	Data	Review	Wew	Add-In
	Morningstar *							
Me	nu Commands							
	Jr =MST	rs["GOOG","dia	se",A1,A2,	"dates=	true, days	(* 2 C*)		
	A	B	С	D	E	F	G	
1	7/31/2011							
2	8/31/2011							
3		8/1/2011	606.77					
1		8/2/2011	592.40					
5		8/3/2011	601.17					
5		8/4/2011	577.52					
7		8/5/2011	579.04					
5		8/6/2011						
9		8/7/2011						
0		8/8/2011	546.02					
1		8/9/2011	573.41					
2		8/10/2011	549.01					
3		8/11/2011	562.13					
4		8/12/2011	563.77					
5		8/13/2011						
6		8/14/2011						
7		8/15/2011	557.23					
8		8/16/2011	539					
9		8/17/2011	533.15					
0		8/18/2011	504.88					
1		8/19/2011	490.92					
2		8/20/2011						
3		8/21/2011						
46		8/22/2011	498.17					
5		8/23/2011	518.82					
б		8/24/2011	523.29					
7		8/25/2011	520.04					
8		8/26/2011	526.86					
9		8/27/2011						
0		8/28/2011						
1		8/29/2011	539.08					
2		8/30/2011	540.7					
3		8/31/2011	540.96					

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").

	Home	Insert Pag	e Layout	Formulas	Data	Review	View	Add-Ins			
	Morningstar *										
Me	Menu Commands										
0	f _∞ =N	STS("XXX:9146	5","total_re	et", A1, A2	,"Dates=Tr	ue,Freq=r	n,Days=T")			
	А	В	С	D	E	F	G	Н			
1	12/31/2009										
2	12/31/2010	1									
3		1/2010									
4		2/2010	1.48								
5		3/2010	4.43								
6		4/2010	-0.31								
7		5/2010	-3.93								
8		6/2010	-2.54								
9		7/2010	3.03								
10		8/2010	-0.86								
11		9/2010	2.87								
12 13		10/2010	1.90 -0.60								
13		11/2010 12/2010	-0.60								
14		12/2010	2.38								

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

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

0		™ - 😡) :	-						Book1 -	Microsoft E	xcel
C	Home	Insert	Page Layout	Formulas	Data	Review	View	Add-Ins]		
	Morningstar *										
Me	enu Commands										
0	∫x =M	STS("NAS:	PASAX","NA	V_daily", M	SDATE("I	syend-2s"	, MSDATE	("Isyend")	,"Dates=Tr	ue,Freq=d	,Days=C")
	А	В	С	D	E	F	G	Н	1	J	К
1	7/1/2010	11.70									
2	7/2/2010	11.68									
3	7/3/2010										
4	7/4/2010										
5	7/5/2010										
6	7/6/2010										
7	7/7/2010										
8	7/8/2010										
9	7/9/2010										
10	7/10/2010										
11	7/11/2010										
12	7/12/2010	11.79									
13	7/13/2010										
14	7/14/2010										
15	7/15/2010										
16	7/16/2010	11.84									

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.

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🕙 <u>F</u> ile	<u>E</u> dit	<u>V</u> iew <u>I</u> r	nsert F <u>o</u> rm	at <u>T</u> ools	<u>D</u> ata <u>W</u>	<u>/</u> indow	<u>M</u> orningstar Pl	ug-In	Mo	rningstar	<u>H</u> elp	Ado <u>b</u> e PDF
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1										<u>A</u> bout M	lornings	tar Excel API

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.

ick Start	Downloads	User Guide	Templates	Data Dictionary	FAQS			
Open End F	und	~	Search for		0	K Export		
Close End I	Fund							1
Close End I	Fund Category		Data points (under "Open End Fund" ·	> "ALL"			
-	Fraded Fund		Short nam	e		Full name	Туре	
Exchange T Hedge Fund	Fraded Fund Categ	ory	# Buvers 1	Institutions		# Buvers (Institutions)	Discrete value	
-	, Fund Category			Mutual Funds		# Buvers (Mutual Funds)	Discrete value	
Insurance				=			0.000 000 0000	
Market Ind	ex		#_Buyers_9	Sep_Accts		# Buyers (Sep Accts)	Discrete value	
Money Mar	ket Fund		#_Complete	ely_Sold_Institutions		# Completely Sold (Institutions)	Discrete value	
Money Mar	ket Fund Category		#_Complete	ely_Sold_Mutual_Funds		# Completely Sold (Mutual Funds)	Discrete value	
Open End	Fund		#_Complete	ely_Sold_Sep_Accts		# Completely Sold (Sep Accts)	Discrete value	
Open End F	Fund Category		# New Buy	ers Institutions		# New Buvers (Institutions)	Discrete value	
Stock				vers Mutual Funds		# New Buvers (Mutual Funds)	Discrete value	
Equity Ty								
	s and Turnover Da edule and Breakdo			vers_Sep_Accts		# New Buyers (Sep Accts)	Discrete value	
	edule and Breakdo Country Exposure		#_Owners_	Institutions		# Owners (Institutions)	Discrete value	
	Portfolio Statistice		#_Owners_	Mutual_Funds		# Owners (Mutual Funds)	Discrete value	
Fixed-Inc	Sector Exposure		#_Owners_	Sep_Accts		# Owners (Sep Accts)	Discrete value	
Mornings	tar Ratings and Gr	ades	#_Sellers_I	nstitutions		# Sellers (Institutions)	Discrete value	
Operatio	ns		# Sellers N	Iutual Funds		# Sellers (Mutual Funds)	Discrete value	
Ownersh	ip Statistics		# Sellers 9	en Accte		# Sellers (Sep Accts)	Discrete value	
Performa								
Snapshot	t	~	#_of_Bond_	_Holdings		# of Bond Holdings (Long)	Series value	1

To use Morningstar Excel API, you need to have an account for Morningstar Direct and then you will have permission granted to Morningstar Excel API. Please <u>click here</u> to learn more about Morningstar Direct and <u>click here</u> to learn more for about Morningstar Excel API. For your convenience, a sample is put in download package to help you start. And an initial series of templates are available under Templates. We invite you to help guide our template development by providing your feedback, wish lists, and ideas. Please <u>click here</u> and drop us a note. As always, thank you for your input!

3. Go back to the Morningstar add-in and this time, click on Templates.

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1											<u>A</u> bout M	lornings	tar Excel API

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.

Mornings	star Excel API		_	_
Quick Start	Downloads User Guide Templates Data Dictionary FA	NQS		
Harding and the second	Price.xls Retrieve daily prices. For stocks, close end funds, exchange trade funds and Market index, retrieve daily closing price. For open end funds and money market funds, retrieve daily price. Customize ticker and time period.	Version Version 1.1	Upload Date 10/24/2011	Download Now 🕴
HARDING CONTRACT OF A CONTRACT	Return Index.xls Retrieve daily market return index for stocks, close end funds, exchange trade funds and Market index. Retrieve daily return index for open end funds and money market funds. Customize ticker and time period.	Version Version 1.1	Upload Date 10/24/2011	Download Now 🔹
The second secon	High_Low_Open_Closing Prices.xls Retrieve daily high/low/open/closing prices for stocks. Customize ticker and time period.	Version Version 1.1	Upload Date 10/24/2011	Download Now 🔹
	Morningstar Rating History.xls Retrieve historical Morningstar Rating on monthly basis for funds. Customize ticker and time period.	Version Version 1.1	Upload Date 10/24/2011	Download Now
	Rating.xls Retrieve Morningstar Rating components as of the most recent rating effective date.	Version Version 1.1	Upload Date 10/24/2011	Download Now 🔹
	Dividend_Split.xls Retrieve dividend and split. Customize ticker and time period.	Version Version 1.1	Upload Date 10/24/2011	Download Now 🕴
Total:6	Page 1 of 1			Previous Next

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



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

		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 Ernerging Mkts Stock ldx 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		1.000																		
MDWIX	BlackRock World Income Inv A		0.690																		
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					0.892															
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							0.878													
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												0.957								
LBFAX	Loomis Sayles Bond Admin	0.821	0.820										0.738								
ODMAX	Oppenheimer Developing Markets A		0.776										0.892								
VEMAX	Vanguard Emerging Mkts Stock ldx Adm	_											0.879								
GSCAX	Goldman Sachs Commodity Strategy A	-											0.710				0.758	1.000			
HCMRX	Harbor Commodity Real Return ST Adm												0.664					0.899			
PCRAX	PIMCO Commodity Real Ret Strat A	0.586											0.668					0.895		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

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	January	February	March	April	May	June	July	August	September	October	November	December
S&P 500 TR 20	4.48	4.32	3.29	-0.63	-6.01							
20	1 2.37	3.43	0.04	2.96	-1.13	-1.67	-2.03	-5.43	-7.03	10.93	-0.22	1.02
20	LO -3.60	3.10	6.03	1.58	-7.99	-5.23	7.01	-4.51	8.92	3.80	0.01	6.68
20	9 -8.43	-10.65	8.76	9.57	5.59	0.20	7.56	3.61	3.73	-1.86	6.00	1.93
20	-6.00	-3.25	-0.43	4.87	1.30	-8.43	-0.84	1.45	-8.91	-16.79	-7.18	1.06
20	07 1.51	-1.96	1.12	4.43	3.49	-1.66	-3.10	1.50	3.74	1.59	-4.18	-0.69
20	2.65	0.27	1.24	1.34	-2.88	0.14	0.62	2.38	2.58	3.26	1.90	1.40
20	-2.44	2.10	-1.77	-1.90	3.18	0.14	3.72	-0.91	0.81	-1.67	3.78	0.03
20	1.84	1.39	-1.51	-1.57	1.37	1.94	-3.31	0.40	1.08	1.53	4.05	3.40
20	03 -2.62	-1.50	0.97	8.24	5.27	1.28	1.76	1.95	-1.06	5.66	0.88	5.24
20	02 -1.46	-1.93	3.76	-6.06	-0.74	-7.12	-7.80	0.66	-10.87	8.80	5.89	-5.87
20	3.55	-9.12	-6.34	7.77	0.67	-2.43	-0.98	-6.26	-8.08	1.91	7.67	0.88
20	-5.02	-1.89	9.78	-3.01	-2.05	2.47	-1.56	6.21	-5.28	-0.42	-7.88	0.49
19	99 4.18	-3.11	4.00	3.87	-2.36	5.55	-3.12	-0.49	-2.74	6.33	2.03	5.89
19	8 1.11	7.21	5.12	1.01	-1.72	4.06	-1.06	-14.46	6.41	8.13	6.06	5.76
19	6.25	0.78	-4.11	5.97	6.09	4.48	7.96	-5.60	5.48	-3.34	4.63	1.72
19	3.40	0.93	0.96	1.47	2.58	0.38	-4.42	2.11	5.63	2.76	7.56	-1.98
19	2.59	3.90	2.95	2.94	4.00	2.32	3.32	0.25	4.22	-0.36	4.39	1.93
19	3.40	-2.71	-4.36	1.28	1.64	-2.45	3.28	4.10	-2.45	2.25	-3.64	1.48
19	0.84	1.36	2.11	-2.42	2.67	0.29	-0.40	3.79	-0.77	2.07	-0.95	1.21
19	-1.86	1.30	-1.94	2.94	0.49	-1.49	4.09	-2.05	1.18	0.35	3.41	1.23
19		7.15	2.42	0.24	4.31	-4.58	4.66	2.37	-1.67	1.34	-4.03	11.44
19		1.29	2.65	-2.49	9.75	-0.67	-0.32	-9.04	-4.87	-0.43	6.46	2.79
19		-2.49	2.33	5.19	4.05	-0.57	9.03	1.95	-0.41	-2.32	2.04	2.40
19	-1.86	1.30	-1.94	2.94	0.49	-1.49	4.09	-2.05	1.18	0.35	3.41	1.23
19	37 13.47	3.95	2.89	-0.89	0.87	5.05	5.07	3.73	-2.19	-21.54	-8.24	7.61
19	0.56	7.47	5.58	-1.13	5.32	1.69	-5.59	7.42	-8.27	5.77	2.43	-2.55
19	85 7.79	1.22	0.07	-0.09	5.78	1.57	-0.15	-0.85	-3.13	4.62	6.86	4.84
19	-0.56	-3.52	1.73	0.95	-5.54	2.17	-1.24	11.04	0.02	0.39	-1.12	2.63
19	33 3.72	2.29	3.69	7.88	-0.87	3.89	-2.95	1.50	1.38	-1.16	2.11	-0.52
19	32 -1.31	-5.59	-0.52	4.52	-3.41	-1.50	-1.78	12.14	1.25	11.51	4.04	1.93
19		1.74	4.00	-1.93	0.26	-0.63	0.21	-5.77	-4.93	5.40	4.13	-2.56
19	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	
Avera	ge 0.97	0.14	1.24	2.03	1.43	0.03	0.90	0.38	-0.69	1.28	1.97	1.84
	0.42	10.05	0.70	6.06	7.00	0.42	7.90	14.45	10.07	24.5.4	0.04	E 07
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.



Yield Curve Template

Click Here to Access the Template

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



Fund Sheet Template

Click Here to Access the 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.



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.

Ticker:	nas:aapl					Report as of:	6/27/2012
Name:	Apple, Inc.	Exchange					
CUSIP:	037833100	Business Country					
Sector:	Technology	Industry	: Technology			INC JUNI	NUJIAN
	Current	52 Week	52 Week	52 Week	52 Week		
	Price	High	High Date	Low	Low		
Price	574.50	628.44	4/10/2012	332.04	6/27/2011		
Fair Value Estimate	670.0	000.00					
Morningstar Rating	****	800.00					
Stock Style	#						
Current P/E	14.00539	700.00					
52 Week High P/E	17.58599						
52 Week High P/E	11.53						
		600.00	$\sim \sim$	-			
Current P/B	5.24101			$\sim \sim \sim \sim$	$\sim \sim$		
52 Week High P/B	6.39450	1		\checkmark		Apple, Inc.	
52 Week High P/B	4.19245	500.00					
						Morningstar Fair Value	
Current P/S	3.80	400.00					10 Day Rolling Std Dev
52 Week High P/S	4.54	400.00					
52 Week High P/S	2.97						-A
Current P/FCF	12.12151	300.00					r Mart
	15.38232	300.00					
52 Week High P/FCF 52 Week High P/FCF	10.08685	-					V V L
52 Week High P/FCF	10.08085	200.00					
Market Cap (Mil)	537,193.1190	1					
Shares Outstanding	007,190.1190						
(Mil)	935,062,000.00	100.00					Volume
	/	-					0.04
ROE % TTM	47.1011						M
ROA % TTM	31.4166	0.00					MAL. M
FCF/Share TTM	47.3951	. n2 n2 n2	and and and and	ar ar ar ar	all all		1 m/m/
Total Assets	150,934,000,000.00	3/28/2012 4/4/2012 4/11/2012	18/1012 8/29/2012 5/2/2012 5/9/2012 5/1	10012 512912012 513012012 61612012	3/2012 6/2012012		
Current Assets	50,712,000,000.00	3, 0, 0	" A' ' ' ''	SI SI ~ 01	61		
Total Liabilities	48,436,000,000.00	-	Trailing Mo Volume	1			· · · · · · · · · · · · · · · · · · ·
Current Liabilites	32,036,000,000.00	-	1/2012	2/2012	3/2012	4/2012	5/2012
Cash/Total Assets %	22.3011	1	13,996,855.0	34,000,054.0	26,108,485.0	18,076,434.0	17,568,229.0
Debt/Equity %	-N/A	1	10/000/00010	01/000/00110	20/200/10010	10/07/07/10/10	1,,000,22010
Sales per Employee	1,710,094.8	1	Annual EBITDA				
	, , ,	-	2007	2008	2009	2010	2011
Ex-Dividend Date	11/21/1995	1	4,409,000,000.00		11,740,000,000.00		
5 Yr Div Yield %	-N/A	1					
Forward Div Yield	-N/A	1	Free Cash Flow				
Date of Last Split	2/28/2005	1	2007	2008		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