An Introduction to **Workspace Datastream**

Ulm University

Institute of Finance

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1. How to plug into Datastream

You can use Datastream through Excel via the Workspace add-in. If you do not see the "Workspace" add-in in Excel, go to File -> Options -> Add-Ins and select the Manage "COM Add-ins" from the bottom dropdown.



Check the "Workspace" checkbox and select OK

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In the following sections, we give examples on how to work with Datastream in Excel.

2. Finding what you are looking for

From the Workspace ribbon in Excel, select Datastream Formula.



A new window opens:

Datastream Formula				()
Series/Lists:	Search Series/Lists			▼ ▼ ℝ <i>f</i> ×
	Time Series for each ite	em in list Symbology: Datastream	/: Equities	✓ Series Editor
Datatypes/Expressions:	Search Datatypes			🔻 🍸 🀺 🔣 🖍 🕏 Ex
Start-End 🗸	From	-2Y 💌 🔣 Relative entr	ry box	Datatype Editor History
	Frequency	Daily 🔻 🔣		
Display Custom Hee Display Row Titles Display Column Title Display Column Title Display Headings Transpose Data Display Code	ader Eoit	Display Currency Display Latest Value First Hyperlink To Series Metadata Hyperlink To Datatype Definition Auto Refresh Auto Resize for Destination Range	Display Expression — • 1st Series • 1st Series & Descript Date Format — • Yearly-Date • Quarterly-Date • Monthly-Date • Not Available String — • Value in Settings • Value	tion
=DSGRID(******-2Y****	'Daily","RowHeader=true;Cc	IHeader=true;Headinq=true;Transpose=true;Code=true	e;Curn=true;DispSeriesDe;	scription=true;YearlvTSF Cancel Insert

You need to determine the series (e.g. the DAX, BASF, German unemployment rate) and the type of data (e.g. price, depreciation, net income). For your request, you also need to specify the interval and the frequency. Series can be identified through their specific Datastream symbol, also called the mnemonic. However, there are often alternative ways of identifying a series. For example, you can identify most German stocks by putting a "D" before the WKN (security identification number).

2.1. First example

You need the daily stock price of BASF SE over the years 2010 to 2024. In the *Datastream Formula* window, either start typing (e.g., basf) in the Series/Lists field to get suggestions of Datastream symbols, or click on *Find Series* button \square (right to the Series/Lists field). The *Datastream Navigator* opens: Insert your request (basf) into the upper input field. Results are shown immediately.

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BACK RECENT SEARCHES SEARCHING HINT	S SYNCHRONI	ISE USER DATA CHARTING	HELP TRAINING				NAVIGATOR					
⊷∄ 開 basf			× Search			eference MY SELE ctivity Filter - Active s	CTIONS (0) series only					
ADD FILTERS	Suggestion											
CATEGORY Slop Fillering Equites Showing results filtered to Equites. Did you mean: results from All Categories ? (35727 matches)												
EXCHANGE Multiple	Results for I	basf (filtered)		review Transfer 📓 1-15 of 32		Sort by Ranking						
London 4		Display longer Names										
Deutsche Boerse AG 3		▼ Name ▼	Symbol Hi	ist.▼ Exchange▼	Market▼ C	Currency ¥	Sector▼					
Mexico 2		* * * BASE INDIA		1990 National India	India I	ndian Rupee	Chemicals					
More single filters N		*** BASF		1973 Deutsche Boerse AG	Germany E	Euro	Chemicals					
wore single mers		* * * BASF (XET)		1991 Xetra	Germany E	Euro	Chemicals					
MARKET Multiple		*** BASE FOOD		2022 Tokyo	Japan J	lapanese Yen	Unclassified					
Germany 26		* * BASF (MIL)	I:BASE 2	2007 Milan	Germany E	Euro	Chemicals					
India 2		* * BASF (BUD)		2011 Budapest	Germany F	lungarian Forint	Chemicals					
Estado d		# # BASF (MEX)	9740QL 2	2013 Mexico	Germany M	lexican Peso	Chemicals					
Estonia 1		* * BASF (BUL)	BL:BA1	2023 Sofia	Germany E	Euro	Chemicals					
Japan 1		# # BASF (OTC)	@BFFAF 2	2010 Non NASDAQ OTC	Germany L	United States Dollar	Chemicals					
United Kingdom 1		* * BASF (PET)		2021 Saint Petersburg	Germany E	Euro	Chemicals					
United States 1		* * BASF (SWX)		1990 Six Swiss	Germany S	Swiss Franc	Chemicals					
CURRENCY Multiple		* * BASF (WBO)		2017 Vienna Stock Exchange	Germany E	Euro	Chemicals					
Euro 17		* * BASF CEDEAR		2011 Buenos Aires	Germany A	Argentine Peso	Chemicals					
United States Dollar 3		* * BASE SE ADR 4:1	@BASFY 1	1994 Non NASDAQ OTC	Germany L	Jnited States Jollar	Chemicals					
German Mark 2		BASE SE ADR (FRA)		2004 Deutsche Boerse AG	Germany E	Euro	Chemicals					
More single filters »	Explore more	results like these: India » Cherr	icals									
ТҮРЕ		Germany » C Japan » Und	hemicals assified									
Equity 28												

The result list contains many entries for BASF because BASF shares are traded on several exchanges and Datastream keeps individual records of different data sources. Just "BASF" leads you to the data from Deutsche Börse, the major German exchange. Click on the *Symbol* "D:BAS", and the symbol will be pasted into the request window of Excel.

Search for the appropriate type of data by typing something into the *Datatypes/Expressions* field or by clicking on the *Datatypes* button (right to the *Datatypes/Expressions* field). For example "UP" gives you the unadjusted price, the price that was actually quoted at the respective day in the past. Select a *Start Date* and an *End Date* as well as your *Frequency*. Have a look at the screenshot below:

	Time Series for each it	em in list Symbology:	Datastream \sim	Category	Equities	✓ Series E	ditor
atatypes/Expressions:	UP						5 Ex
Start-End 🗸 🗸 🗸	From	31.01.2010	▼ 🖳	Relative entr	/ box	Datatype Editor His	story
	То	31.12.2024	▼ 🖳				
	Frequency	Daily	▼ 🖳				
Options	der Edit	Display Currency			 Display Expression — 1st Series 		
Display Row Titles		Display Latest Value	First		1st Series & Descri	ption	
🖌 Display Column Title	s	Hyperlink To Series	Metadata		Date Format		=1
Display Headings					Yearly-Date		
Transpose Data		Auto Refresh			Quarterly-Date		
Display Code		Auto Resize for Desize for Des	ination Range		Not Available String – O Value in Settings Value		
=DSGRID("D:BAS","UF	","31.01.2010","31.12.202	24","Daily","RowHeader=true	e;ColHeader=	true;DispSeries	Description=true;Yearlvi	TSFormat=false;Quarterl	ντ Inser

Press *Insert* in the Datastream window (or *Enter* on your keyboard) and the data will be written into the sheet. The upper left corner of the output range is the cell that was selected in the sheet before you opened the request window.

2.2 Second example

You need annual data on total assets of BASF starting in 2010. By typing in the *Datatypes/Expressions* field or by clicking on the button next to it on the right, you can search for the appropriate type of data, here WC02999 for "Total Assets".

< > Datastream Formula.						
Series/Lists:	D:BAS,					∕▼ ℝ ƒҳ
	Time Series for each ite	em in list Symbology: Datastream	 ✓ Category 	: Equities	~	Series Editor
Datatypes/Expressions:	WC02999,				🔻 T T _{ir} 🗄	₽ <i>f</i> _x \$ Ex
Start-End \lor	From	31.12.2010 🗸 🔣	Relative entr	y box	Datatype Edite	or History
	То					
	Frequency	Yearly 🔻 🔣				
Options — Option	ader	Display Currency		Display Expression —		
Display Row Titles		Display Latest Value First		 1st Series & Descrip 	otion	
Display Column Title	es	Hyperlink To Series Metadata		Date Format		
Display Headings				Yearly-Date		
Transpose Data		✓ Auto Refresh		Quarterly-Date		
🖌 Display Code		Auto Resize for Destination Ran	ge	Monthly-Date Not Available String — Value in Settings		
				Value		
=DSGRID("D:BAS","WG	C02999","31.12.2010","","Y	"RowHeader=true:ColHeader=true:He	eading=true;Code	∋=true;DispSeriesDescrip	otion=true;Yearly	/TSFormat

Select time period and frequency, press *Insert* and you obtain the following results:

	А	В	С	D
1	Start	2010		
2	End	2024		
3	Frequency	Y		
4	Name	BASF SE - 1	TOTAL ASS	ETS
5	Code	D:BAS(WC	02999)	
6	2010	58788000		
7	2011	60626000		
8	2012	63369000		
9	2013	63390000		
10	2014	69166000		
11	2015	69045000		
12	2016	73983000		
13	2017	76650000		
14	2018	84214000		
15	2019	84063000		
16	2020	76906000		
17	2021	84783000		
18	2022	83592000		
19	2023	76778000		
20	2024	79841000		
21				
	1			

2.3 Third example

You are looking for data on unemployment in Germany. In the *Datastream Navigator*, select the data category *Economics* and use the *Advanced Search* button. You may want to type "unemployment" in the *Name* field, and select "Germany" as the market.

Press *Ok* and you will get a long list of different data in unemployment (e.g. differing in the data provider, or unemployment in various regions). Try to identify what you need. If the list is too long to go through, try to narrow down your search in the search criteria window of the *Advanced Search* in the *Datastream Navigator*.

3. Download data for the stocks contained in a stock market index

Select the *Datastream Formula Builder* window. Enter the Code for the index in *Series/Lists* field, e.g. "LDAXINDX" for the DAX index. Select the *Datatype* that you want, e.g. "RI" for total return index and select dates and frequencies as before. Tick "Time Series for each item in list". Press *Insert*.

Datatypes/Expression: Search Datatypes Start-End From To Image: Comparison of the second	Series/Lists:	LDAXINDX, Time Series for each	h item in list Symbology: Datastream 🗸 C	ategory: Constituent Lists	▼ ▼ ℝ f _x Series Editor
Start-End From 31.12.2023 Image: Constraint of the start of	Datatypes/Expressions:	Search Datatypes			🔻 🍸 🀺 🔣 🏂 🕏 Ex
Options Display Custom Header Edit Display Currency Display Expression Image: Display Row Titles Display Latest Value First 1st Series 1st Series Image: Display Column Titles Hyperlink To Series Metadata Date Format Image: Display Latest Value First Image: Display Latest Value First Image: Display Latest Value First Image: Display Column Titles Hyperlink To Datatype Definition Date Format Image: Display Latest Value First Image: Date Format Quarterly-Date Image: Display Code Auto Refresh Image: Monthly-Date Image: Display Code Auto Resize for Destination Range Not Available String Image: Value Image: Display Code Value Image: Display Code Value Image: Date Format	Start-End V	From To Frequency	31.12.2023 ▼ ℝ Relat ✓ ℝ Monthly ℝ	ive entry box	Datatype Editor History
	Options Display Custom Hea Display Row Titles Display Column Title Display Headings Transpose Data Display Code	der Edit	 Display Currency Display Latest Value First Hyperlink To Series Metadata Hyperlink To Datatype Definition Auto Refresh Auto Resize for Destination Range 	Display Expression 1st Series 1st Series & Des Date Format Vearly-Date Quarterly-Date Monthly-Date Not Available String Value In Settings Value	cription

The result should look similar to this:

	А	В	С	D	E	F	G	н	1	J	к	L
1	Start	31.12.2023										
2	End	30.04.2025										
3	Frequenc	M										
4	Name	Code	CURRENC	31.12.2023	31.01.2024	29.02.2024	29.03.2024	30.04.2024	31.05.2024	28.06.2024	31.07.2024	30.08.20
5	ADIDAS ()	870874	E	184.16	176.12	187.12	207	226.4	231.5	223	231.3	2
6	AIRBUS (X	289746	E	140.08	147.8	153.02	170.76	154.64	155.9	128.26	140.02	138.
7	ALLIANZ (866033	E	241.95	247.8	253.85	277.8	266.6	268.3	259.5	260.8	280
8	BASF (XET	866034	E	48.78	44.46	47.075	52.93	49.155	48.41	45.185	43.1	45.
9	BAYER (XE	866035	E	33.63	28.9	28.09	28.43	27.35	28.24	26.38	27.495	27.8
10	BEIERSDO	870528	E	135.7	135.85	132.55	134.95	140.55	144.35	136.55	134.2	130.
11	BMW (XET	866038	E	100.78	96.78	109.22	106.96	102.45	93.18	88.38	85.82	83.
12	BRENNTA	69026P	E	83.22	82.26	84.38	78.08	74.86	65.98	62.96	65.82	67.
13	COMMER	866039	E	10.76	10.68	10.695	12.73	13.96	15.54	14.185	15.09	13.
14	CONTINE	866040	E	76.92	76.2	74.08	66.9	60.84	62.24	52.9	56.7	61.
15	DAIMLER	2628M2	E	34.02	33.26	37.78	46.96	42.31	39.17	37.17	35.74	34.
16	DEUTSCHE	866043	E	12.364	12.034	12.362	14.582	15.01	15.226	14.908	14.436	14.7
17	DEUTSCHE	13454V	E	186.5	184.75	193.6	189.65	181.15	182.9	191.1	189.4	202

How do I find out the index list code to make such a download?

This can be done with the *Datastream Navigator*. In the *Datastream Formular Builder* window, press the *Find Series* button (first button from the left in the upper right corner). Datastream Navigator opens.

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BACK RECENT SEARCHE	S SEARCHING HINTS	SYNC	CHRONISE U	ISER DATA	CHARTING	HELP	TRAININ	G			NA	VIGATOR
- 🛱 🖽 day							Soarch	Advopcod Sor	arob	Shara Search Befere	MV SELECT	
						<u> </u>	Searci	Auvanceu Sea	arun	Share Search Refere	Either Active cor	ino only (
										Activity	Filler - Active ser	les only
DD FILTERS	« CLEAR ALL	Resul	its for dax	(filtered)					Export 🛛 1	-15 of 883 Next > Sho	ow All Sort by Ran	iking 🗸
CATEGORY	« Stop Filtering			Display I	onger Name	s						
		All		Name				Symbol	Market	Source	Type	Size
Constituent Lists					FORMANCE				Germany	Deuteche Boeree	Equities	onec
ARKET	Multiple		**	FUREX -	DAX FX - COI		IS	LEUTGXSC	Germany	Datastream	Equilies Future Series	
Sermany	813		**	EUREX -	DAX EX - DE/	D		LFUTGXSD	Germany	Datastream	Future Series	5
	05		**	EUREX -	DAX EX - LIVI			LFUTGXSL	Germany	Datastream	Future Series	
inxed	35		**	DAX 'KUF	lS'			LDAXIDXI	Germany	Deutsche Boerse	Equities	
United States			**	DAX 'KUF	S' OPEN			LDAXIDXIN062	Germany		Equities	
no value)	34		**	DAX 'KUF	RS' OPEN			LDAXIDXIN	Germany		Equities	4
			**	DAX 'KUF	S' OPEN			LDAXIDXIN032	Germany		Equities	
OURCE			**	DAX 'KUF	IS' OPEN			LDAXIDXIN102	Germany		Equities	
Jeutsche Boerse	196		**	DAX 'KUF	IS' OPEN			LDAXIDXIN092	Germany		Equities	
Datastream	24		**	DAX 'KUF	IS' OPEN			LDAXIDXIN042	Germany		Equities	
no value)	663		**	DAX KUF	IS' OPEN			LDAXIDXIN022	Germany		Equities	
			<u>**</u>	DAX KUP	IS OPEN				Germany		Equities	
YPE	Multiple				IS OPEN				Germany		Equities	
quities	699			DAX KUP				LDAAIDAIN012	Germany		Lyumes	
Future Series	16	Hover	over rows a	bove to pre-	view details - o	lick on ro	ws to pin a	nd chart				
Option Series								DAX Performa	nce			
(no value)	160							Mnemonic LDAXINDX				
ACTIVITY								Market	Germany			
Active	828	Charts not available for Constituent Lists				Source	Deutsche	Boerse				
Dead								type	Equilies			
								Constituent List fo Contains	r 2 Equity 40 Const	Indices ituents		
								A.F	Add	abora to My Coloclines		

Select the data category *Constituent lists* on the left side of Datastream Navigator and just type *dax* in the *Search* field (screenshot above) or click on *Advanced Search* and search for *dax* in *All Fields* or in *Name and Long Name* field (screenshot below).

A Datastream Navigator									··· (9)	– 🗆 X
BACK RECENT SEARCHES SEARCHIN										VIGATOR
dax										IONS (0)
										es only 📃
ADD FILTERS « CLEA		Suggestion								
CATECOPY // Slap Fil		Showing results filter	ad to Constituent Lists							
CATEGORI COMPT		Did vou mean: resu	Its from All Catego	ries ? (35 0)	776 matches)					
Constituent Lists										
MARKET	Enter te:	ct or patterns to filter	on specific fields su	ch as the na	ame, mnemon	nic or the RIC				
Germany	All Field	s								
Mixed										Size ▼
United States	dax							×		40
(insurface)	• A	nd Or								6
(no value)	Namo a	nd Long Nama								90
SOURCE	Name a	nu Long Name							Future Series	3
Deutsche Boerse	С	ontains	~						Equities	40
Datastream	and C	ontains	\sim					• =	Equities	40
(no value)	Datastr	am Mnemonic								40
									Equities	40
TYPE	С	ontains	×				×			40
Equities			OK	Cancel	Reset				Equities	40
Future Series									Equities	40
Option Series			AX 'KURS' OPEN						Equities	40
(no value)			AX 'KURS' OPEN							40
Active					DA	V Porforman				
Active					DA	A renorman	ice			
Dead					LDA	XINDX				
					Mark	ket rce	Germany Deutsche			

The example above focuses on downloading data for current index constituents. However, for many empirical tasks it is important to obtain lists of historical index constituents. For example, you might want to backtest a trading strategy to see how it would have performed in the past. In this case, it is important to run the backtest on the index as it was in the past to avoid survivorship bias. For some indices, Datastream also provides historical constituent lists. The code for these lists is the code for the current list followed by the month and year (MMYY) for which you want to retrieve the constituents, i.e. if you want to retrieve the constituents for the DAX 40 in December 2021, the code is as follows LDAXINDX1221.

If you want to retrieve data for historical constituents over multiple periods, it is a good idea to structure your download in request tables. A brief description of request tables is given in the next chapter. An example of how to download data for historical constituents over multiple periods can also be found in chapter 8 of the Introduction to Datastream from the University of Bern.

4. Downloading data for a large number of stocks

Sometimes you need to compile a dataset with all stocks that are listed at a specific stock exchange as well as those that were listed at the exchange at some point in the past.

In this example, it is shown how to download all German stocks from the Xetra Exchange.

- Go to the Datastream Navigator.
- Firstly, choose a single category: *Equities*.
- Next search option is exchange select *Xetra*.
- Then you can select a market select *Germany*.
- Under *Type* choose *Equity* to limit your search to common stocks. If you also want to include *preferred stocks*, simply click on *Multiple* and the new window opens. Then you see all possible options and you can select as many types as you want.



• If you do not choose between active and dead stocks under *Activity*, both of them will be selected.

Refining search on the left side of the Datastream Navigator automatically updates the results on the right side of the Datastream Navigator. You can see a long list with names, symbols and other information.

Next, you can see how to export your data into Excel.

_								
\int	Resul	ts (fill	tered) Disp	olay longer Names				Preview Export 🔤 1-15 of 2.183 Next >
	All			Name	Symbol	Hist.	Currency	Sector
			***	ALLIANZ (XET)	D:ALVX	1991	Euro	Non-life Insurance
			***	BASF (XET)	D:BASX	1991	Euro	Chemicals
			***	BAYER (XET)	D:BAYNX	1991	Euro	Pharmaceuticals and Biotechnology
			***	DEUTSCHE BOERSE (XET)	D:DB1X	2001	Euro	Investment Banking and Brokerage Services
			***	DR ING HC F PORSCHE(XET) PREF.	D:P911X	2022	Euro	Automobiles and Parts
			***	MERCEDES-BENZ GROUP(XET) N	D:MBGX	1998	Euro	Automobiles and Parts

You have now two possibilities to proceed. You press *All* (left blue arrow) and Datastream pastes all results to the *Time Series Request* window. Or you proceed with the Excel symbol (right blue arrow). The former method is straight forward but you are fixed to the results of this single search. Moreover, the number of characters that are allowed to be put in the *Series/List field* of the *Datastream Formula Builder* window may be limited (so check whether all the symbols you want to select have actually been pasted into the *Series/List field*). The second method (export to Excel) allows the combination of

different search results. Again there may be restrictions on the number of lines that are exported but since this has been changing over time we do not provide you with a maximum number but simply point out that you should check whether your export is complete.

Click on the Excel symbol and you can download the data. Close the navigator and request window and open the downloaded file.

	A	В	С	D
1	Name	Symbol	RIC	Start Date
2	ALLIANZ (XET)	D:ALVX	ALVG.DE	01.07.1991
3	BASF (XET)	D:BASX	BASFn.DE	01.07.1991
4	BAYER (XET)	D:BAYNX	BAYGn.DE	01.07.1991
5	DEUTSCHE BOERSE (XET)	D:DB1X	DB1Gn.DE	02.02.2001
6	DR ING HC F PORSCHE(XET) PREF.	D:P911X	P911_p.DE	29.09.2022
7	MERCEDES-BENZ GROUP(XET) N	D:MBGX	MBGn.DE	27.10.1998
8	VONOVIA (XET)	D:VNAX	VNAn.DE	10.07.2013
9	ZALANDO (XET)	D:ZALX	ZALG.DE	30.09.2014
10	029 GROUP (XET)	D:Z29X	Z29.DE	10.10.2022
11	1&1 (XET)	D:1U1X	1U1.DE	12.10.1998
12	11 88 0 SOLUTIONS (XET)	D:TGTX	TGTG.DE	23.04.1999
13	123FAHRSCHULE (XET)	D:123FX	123F.DE	02.11.2021
14	2G ENERGY (XET)	D:2GBX	2GBG.DE	30.07.2007

Select the column with Symbols and copy it (the highlighted column in the above example). Now open a new Excel file. From the *Workspace* ribbon choose *New Request Table*.

In the *Series Lookup* column, paste your Symbols or refer to Symbols when they are stored outside the request table.

	Α	В			(с		D								
1		LSE	G						DFORequestTable 4.1.26(Sync)							
2	Datastream															
3		Proce	ss Tabl	e	Add to	Index		Fir	id Series							
4																
5		Upd-	ate		Reque	est Type		Format	115	S	Series Lookup					
6		Y Y/N	N	S	TS	TSL	L	Select Format	Fir	nd Series	ÉR,					
7		YE	S		Т	S		RCT	D:ALVX							
8		YE	S		Т	S		RT	D:BASX	D:BASX						
9		YE	S		Т	S		RT	D:BAYN)	D:BAYNX						
10		YE	S		Т	S		RT	D:DB1X	D:DB1X						
11		YE	S		Т	S		RT	D:P911)	D:P911X						
12		YE	S		Т	S		RT	D:MBGX	(
13		YE	S		Т	S		RT	D:VNAX	D:VNAX						
14		YE	S		Т	S		RT	D:ZALX	D:ZALX						
15		YE	S		Т	S		RT	D:Z29X	D:Z29X						
16		YE	S		Т	S		RT	D:1U1X	D:1U1X						

Now we discuss the filling of the remaining fields. Let us start with the left part. "Yes" in the *Update* column is obvious. "TS" is for the time series request because we want to download a time series for

each code. The *Select Format* tells Datastream whether to display series names, dates, etc. and whether the data belonging to one code should be written in one row or one column. Say we would like to arrange the data such that the data for one stock are in one row. Then choose a "T" for transpose because by default a series is displayed in a column. The row title "R" in this case is the name of the series – we would like to display it for each series, which is why there is an "R" everywhere. The column titles "C" are the dates. We need these dates only once because they will be the same for each series if we choose the same start and end date for each series. So we add the "C" only for the first series. Also note that you get a selection of possible choices by clicking on the grey buttons.

		E			F		G	н	I.			
Find	DFOReque:	stTable 4.1.26(Sync) On O Proce Pre-R On C	pen ess Timeout lequest Macro: ompletion Macro	Process Table 30 0:		Display Detail: Compatible op Enable Seque: Cose external Hide Progress	Support RICI Reference Style Display Destination as an Excel Suppress Comments Use as "not available" string Cri + R to Process Table				
	Se Se	ries Lookup		115	Datatype/Expression:	;	Start Date	End Date	Frequency			
mat	Find Series	ER.		Datatypes	s 🕺	fx	Latest Value (Static)	Latest Value (TS)	Monthly 🚽]		
	D:ALVX			RI			31.01.2010	31.01.2025	Monthly	='D'!\$A\$1		
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	D:BAYNX			RI			31.01.2010	31.01.2025	Monthly	='D'!\$A\$4		
	D:DB1X			RI			31.01.2010	31.01.2025	Monthly	='D'!\$A\$5		
	D:P911X			RI			31.01.2010	31.01.2025	Monthly	='D'!\$A\$6		
	D:MBGX			RI			31.01.2010	31.01.2025	Monthly	='D'!\$A\$7		
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Now to the right part. Choose your type of data, e.g. "RI" for total return index. Choose *Start Date* and *End Date*. Choose *Freq* (Frequency). Now the trickier part: Choose the *Data Destination*. I have inserted a new worksheet in the meantime, which I named "D".

The data for the first series starts in D!A1; it spreads over two rows because it includes the dates. For the other series, we need just one row, which is why we then have D!A3, D!A4 and so on. Note that it is very easy to fill this down. Assume that you have already filled down the frequency cells. Now select two data destination cells which differ by one row, e.g. the ones with D!A3 and D!A4. Double click on the lower right corner and the cells will be filled down in the way you want it to be.

Then press *Process Table* and the data will be downloaded.

Research and Worldscope lists

An alternative to constructing a list of stocks as described above is to use Refinitiv's pre-defined constituent lists. These lists have been used in previous financial research (e.g. Ince and Porter (2006)) and can be found by selecting "Constituent Lists" as Category in the navigator. In general, these lists aim to cover all stocks in a given market. However, certain stocks may not be included while other non-equity instruments may be included in a list. For example, Worldscope lists have very sparse coverage for years prior to 1985. To ensure the quality of your data, it is therefore important to follow the screens outlined in previous research (e.g. Landis and Skouras (2021)).

Research lists only include stocks that are currently active in a given market. In order to include stocks that have gone bankrupt or have been delisted, it is also necessary to download data for these companies using so-called "dead lists". Dead lists include stocks that were traded in a particular market but are no longer active. Most research lists begin with an "F" followed by the country code for the market. Dead lists begin with "DEAD" followed by the country code. As the number of stocks covered for some markets would be too large for a single list, research and dead lists are often divided into several sub-lists. A number is added to the name of the list to identify each sub-list. For example, to see all the research lists available for active stocks Germany, select 'Constituent lists' as the category and enter 'FDE' in the search field.

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Worldscope lists cover currently active and dead stocks of a market and for most markets only one list exists which covers all stocks. To search for Worldscope lists, select "Constituent Lists" as *Category* and enter "WS" or "WSCOPE" in the search field.

Important hints for working with such data:

You will see a lot of cases where you do not get any data. This is not surprising with such a download. Some series will not have data in the period chosen by you; some may not have data for the type of data chosen by you, etc.

If a stock stops trading on an exchange, there are no more prices and you may expect that Datastream has no values for the return series "RI". This is not the case. Datastream rather keeps the value from the last trading day in its database and displays it as the current one. So you need to find a way of dealing with such cases. In other words: if the values for one series do not change from some time on until the end, you should discard those repeated values or set them to missing (e.g. to "NA"). Do not set these data points (or missing data in general) to zero. In some cases, this may be equivalent to discarding them, but in other cases it may introduce big errors. Here's what you can do:

You can write a macro to eliminate the repetitive values at the end of a series. To figure out when a stock stopped trading, you can download (with a static request) the datatype "TIME", which gives you the date when a stock was last traded.

An alternative and usually simpler procedure is to exploit the fact that Datastream has NAs for other datatypes once a stock stopped trading, e.g. for the datatype P. Using the expression X(RI)*(X(P#T)/X(P#T)) in the *Datatype/Expression* field should give the desired result: a series with the return index RI that is set to NA if P is NA.

5. ESG data in Datastream

Datastream provides access to environmental, social and governance (ESG) data for over 9000 companies globally. More than 600 individual ESG-related datatypes are available, from which aggregated ESG scores are calculated to reflect a company's performance in this area. The data availability spans back until 2002.

For an overview of all available aggregated ESG scores click on *Find Datatypes* in the Datastream Formula Builder. Search for "ESG Score" and select *ESG* as Source on the left side.

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Datastream also provides constituent lists for all companies with available ESG data. To get an overview of all available lists in the ESG universe, select "Constituent Lists" in the navigator and type "LA4*" in the search field.

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If you want to retrieve lists for a specific country, the code for the list starts with "LA4CTY", followed by the country code, e.g. for Germany the code would be "LA4CTYDE". Regional lists start with "LA4RGN" and end with the region code and industry lists start with "LA43" followed by the industry code.

6. Further important hints for working with Datastream

a) Date conventions

In finance and many other fields, the convention is to work with end-of-period values for monthly and yearly intervals. When working with monthly data, for example, you should therefore use month-end values. This can be accomplished by entering month-end dates into the date fields, as was done in the examples above.

With weekly data, it is more customary to select a date from the middle of the week. When combining different data sources, make sure that they are not based on different conventions.

b) Identifying non-trading days

Datastream usually exports data for exchange holidays even though there is no trade on such days. For some empirical applications, you need to highlight and purge the data of these days. There are several possible solutions.

- When you want to get for example total return index data for BASF, type "D:BAS" in the Series/List field and "X(RI)*IF#(X(P#S),NNA,ONE)" in the Datatype/Expression field of the Time Series Request window. You will get the total return index of BASF, but it will be negative when there is a non-trading day.
- Find a reliable source of trading days, e.g. <u>https://www.xetra.com/xetra-en/newsroom/trading-calendar/trading-calendar-archive</u>, or take the dates from research data files (e.g. <u>https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html</u>)

c) Which price/ index type to use

For most purposes such as determining volatilities or investment performance, use the total return index (RI). UP (unadjusted price) is the price as it was historically obtained on the exchange. Use it to implement stock price restrictions (e.g. exclude all stocks with a stock price below one dollar). P (price) is the adjusted price, which takes stock splits and similar corporate actions into account, but does not adjust for dividends. It is Datastream's default datatype but it should not be yours. If you use it instead of the total return index, make sure that you provide good reasons for doing so.

d) Data quality

A discussion of Datastream data quality is given in:

Ince, O. S./Porter, R. B. (2006): "Individual Equity Return Data From Thomson Datastream: Handle with Care!", Journal of Financial Research, 29(4), 463-479

Landis, C./ Skouras, S. (2021). Guidelines for asset pricing research using international equity data from Thomson Reuters Datastream. Journal of Banking & Finance, 130, 106128. (working version available at: <u>https://ssrn.com/abstract=3225371</u>)

Brückner, R. (2013): "Important Characteristics, Weaknesses and Errors in German Equity Data from Refinitiv Eikon Datastream and their Implications for the Size Effect", Working Paper.

This literature suggests a number of screens to deal with quality problems, which you should also consider for your analysis.