# *Introduction to Datastream*

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Datastream is a program designed for navigating massive amounts of data. It allows access and interaction with the Datastream International databases in London. Each type of data is organized by a code number. The data can be displayed, analyzed or downloaded with different methods, each one organized by a program number. You input a command through the command line or the menus.

# I

First steps : Open Datastream, observe the main program window. Control functions in Datastream fall into two categories, those that are aimed towards finding a program number and others that are for finding data codes. The first line *Program Number*: is the command line. Immediately below you have two menus *Type of Request* and *Type of Data*.

The *Type of Request* menu allows to choose the method to retrieve data (equally you can directly input the program number in the command line).

-**Reports** : produces a variety of output in for of tables. It is useful to obtain information such as economic indicators for a country over a short time span. As an example click on Reports in the *Type of Request*, then on Economics in the *Type of Data* and finally on Economic Indicators in the *Programs Available*. The program number 150F appears in the command line. Let's check the Key Indicators of your favorite country.

```
DATASTREAM: 150F - ECONOMICS      COUNTRY / PRESET DISPLAY SELECTION SCREEN

Enter codes for one or more categories and one or more countries, separated by
commas.  Enter ? where help is required.

Enter category code(s) e.g. KEY,GDP

KEY INDICATORS     (KEY)     GDP/GNP        (GDP)          INDUSTRIAL ACTIVITY  (IND)
INDUSTRIAL ORDERS (ORD)       RETAIL TRADE    (RET)          EMPLOYED/UNEMPLOYED  (EMP)
EXTERNAL TRADE   (EXT)       PRICES         (PRC)          WAGES/LABOUR COSTS  (WAG)
MONEY SUPPLY    (MON)        CREDIT/DEBT  (CRD)            INTEREST/ FX RATES  (INT)
COMMENTARY      (COM)        SURVEYS        (SUR)          LEADING INDICATORS  (LID)
FORECASTS         (FOR)        MAASTRICHT SERIES  (MAS)     ALL CATEGORIES     (ALL)
CALENDAR        (CAL)

Enter country code(s) below or on next page e.g. US,JP
```

To exit a program click on CLEAR.

-**Time series**: produces output for a series over a specified time period.
-**Graphics**: Enables to plot the data. (Useful to quickly compare time series without downloading the data.)
-**Downloading data.**
-**User created info**: This option will allow you, in effect, to create you own program.
-**Online code lookup**: Use to obtain data codes for use in all the Datastream programs (extremely useful).
-**Database Info & News**: Datastream international news, including announcement of new series.

The *Type of data* menu allows you to select the type of data.

-**Equities**
-**Indices**
-**Interest rates**
-**Exchange rates**
-**Bonds**
-…

To recap you choose a format of output (Type of request) and the type of information (Type of Data) you want to retrieve. Each program, or format of output, will require an input, for instance the code of the data, the frequency, the sample etc.

# II

# To find a data code of a security you have two ways:

The first is a program for looking up data codes by keyword that may be accessed by typing CODE in the command line. You enter a keyword and specify what type of data and in what currency you wish the data to be denominated.

Type CODE, then Lockheed and you will get the following screen:

| CODE | THE FOLLOWING POSSIBLE MATCHES HAVE BEEN EXTRACTED: | | | |
|------|------|------|------|------|
| NAME | | CODE | **MNEMONIC** | CUR | NOTES |
| LOCKHEED CORP (ISE) | | 757162 | LOCK | £ | VALUATIONS ONLY NO DAILY PRICES |
| LOCKHEED MARTIN CORP. | | 154423 | **U:LMT** | U$ | I/B/E/S + DS DATA |
| LOCKHEED MARTIN (XET) | | 14372 | UD:LOMX | E | |
| LOCKHEED MARTIN (FRA) | | 143640 | D:LOM | E | |

Once you have the mnemonic, you can visualize information on the series by typing the mnemonic in the command line. Thus type U:LMT in the command line.

The second method consists in clicking on the CODE button at the top, left hand side of the Datastream windows. The difference is that this latter option searches a collection of codes that resides on the particular computer you are using.

For the financial series you have different datatypes : the default representation of the series code for the equity Lockheed is the closing price, but you could be interested in the daily high price or the dividend yield. To find the datatypes available for codes, type HELP DT? In the command line.

| Datatypes (HELP DT?) | |
|------|------|
| 1 Overview | 7 Exchange rates |
| 2 Default values | 8 Futures and options |
| 3 Equities, Investment Trusts* | 9 Stock market indices |
| 4 Company accounts items used as datatypes | 10 Datatypes for Data Channel |
| | 11 Datatypes for I/B/E/S data |
| 5 Bonds | 12 Datatypes for the euro |
| 6 Interest rates | 13 STOXX Datatypes |

# III

For Economic Time Series you should use a specific program : **150Z**. Type 150Z in the command line, you then access a windows where you have to choose the country or the source of interest. (Remember to find a program number choose the type of request, here On line code Lookup, the type of data, here Economics, and the relevant program). Typing 150Z you obtain:

```
THIS PROGRAM ENABLES THE MNEMONIC FOR A REQUIRED ECONOMIC TIME
SERIES TO BE DETERMINED
COUNTRIES AVAILABLE:
      7  CANADA
     89  EUROLAND (EUROSTAT & ECB)
     29  FRANCE
     30  GERMANY
     31  ITALY
     49  JAPAN
     55  JAPAN - IBJ/NIKKO DATABASE
     58  SWITZERLAND
      1  UNITED KINGDOM
      6  UNITED STATES
     70  OTHER COUNTRIES A TO L
     71  OTHER COUNTRIES M TO Z
     77  GLOBAL AND MISCELLANEOUS INDICATORS
     82  FORECASTS - CONSENSUS ECONOMICS
     84  FORECASTS - EIU
     86  FORECASTS - OECD
     88  OECD HISTORICAL DATA
     80  WIIW EASTERN EUROPEAN DATA
     97  IMF DATA
SELECT COUNTRY REQUIRED:
```

Type 88, the OECD database:

```
SECTORS AVAILABLE FOR COUNTRY SELECTED:
      1  MAIN INDICATORS: COUNTRIES A-M
      2  MAIN INDICATORS: COUNTRIES N-U
      3  MAIN INDICATORS: ZONES
      4  MAIN INDICATORS: SUMMARY TABLES
      5  INDUSTRIAL ACTIVITY: QUANTITATIVE
      6  INDUSTRIAL ACTIVITY: SURVEYS
      7  INDUSTRIAL ACTIVITY: ZONES
     15  QUARTERLY NATIONAL ACCTS: COUNTRIES
     16  QUARTERLY NATIONAL ACCTS: ZONES
     20  ANNUAL GDP SERIES IN U.S. DOLLARS
     99  OECD DISCONTINUED SERIES
SELECT SECTOR REQUIRED OR 'P' FOR PREVIOUS LEVEL MENU:
```

Type 3:

```
SUB-SECTORS AVAILABLE FOR COUNTRY SECTOR SELECTED:
      1  TOTAL OECD-QUARTERLY GDP ACCOUNTS
      2  TOTAL OECD-OTHER SERIES
      3  OECD EUROPE-QUARTERLY GDP ACCOUNTS
      4  OECD EUROPE-OTHER SERIES
      5  EUROPEAN UNION-QUARTERLY GDP ACCS.
      6  EUROPEAN UNION-OTHER SERIES
      7  NORTH AMERICA
      8  G7-QUARTERLY GDP ACCOUNTS
      9  G7-OTHER SERIES
     10  EUROLAND
     11  PURCHASING POWER PARITIES
     12  FINANCIAL DEFICIT/GDP RATIO
```

Finally type 2 and you access the series mnemonics. Note the mnemonic of the standardized unemployment rate. (OCDOCSUNE). Click on CLEAR, type the code in the program line. The Background information is usually useful.

*NOTE: you will often encounter the same description for an economic indicator with 2 or more codes. The only difference will often be the final letter of the code:*

**A** current prices – not seasonally adjusted
**B** current prices – seasonally adjusted
**C** constant prices – not seasonally adjusted
**D** constant prices – seasonally adjusted
**E** seasonally adjusted
**F** not seasonally adjusted

This way of obtaining a code is specific to the ECONOMICS time-series. Now let's find the commodity series OIL Price. Type HELP CO?.

| Commodities | HELP CO? | |
|---|---|---|
| 1 L.M.E | 8 Exotics & Minors # | 16 Softs |
| 2 Metal Bulletin | 9 Feeds # | |
| 3 Precious & Minor Metals | 10 Fibres | 18 Building materials |
| 4 Gold Coins | 11 Grains | (Taiwan) |
| 5 LOCO Gold Mean | 12 Livestock | 19 Semiconductors |
|  Lending Rates | 13 Oilseed, Oils & Fats | |
| 6 Chemicals | 14 Timber, Pulp & Paper | |
| 7 Energy | 15 Seeds & Pulses # | |
| | | |
| 20 Indices | 26 Electricity | |
| 22 Monthly Series** | | |
| 23 List Mnemonics | | |
| 24 Commodity Abbreviations | | |
| | ** Economics clients only | |
| 25 Discontinued Commodities | # Commodity clients only | |

Type 7 and note the mnemonic of Brent OIL. Here we see that the series starts in 1982. Keep in mind that in the IMF database you have commodities as well. Let's find the Brent in this latter dataset. (UKI76AAZA).

# IV

Once you have found the data mnemonics, you probably want to Download the data. The cleanest way to download the data is to use a MACRO. With a macro you will save the series in a CSV file (comma separated), a format that many statistical software recognize. A macro is a little routine that gives instruction to Datastream, here an example: Click on Macro and select Edit Macro…

```
STARTDC(CSVFILE, "a:\example.csv")
OPENDATA TESTLIST

LOOP:
IF &ENDOFDATA = FALSE THEN
INPUT CODE

SEND("900B" +CODE+ ",01/01/77,,M")
GOTO LOOP
ENDIF
ENDDC

TESTLIST:
DATA

"UKI76AAZA"
"OCDOCSUNE"

ENDDATA
END
```

The SEND command activates the command line. Practically you are saying to the Datastream terminal, use the program 900B (download program) to download the data, starting from this date, ending in this date and with this frequency. The frequency codes are:

**D**: daily
**W:** weekly
**M:** monthly
**Q:** quaterly
**Y:** yearly

Once you have completed your macro, save it with the extension .mac and run it from the Macro menu.

# V

As we have seen for the Oil Price, to find a code for other types of data, you have to use an HELP command (you have a complete list at the end of the handout). Let us try to find INDICES codes, for instance the Nasdaq. Enter HELP SI? In the command line. Given it is a National Index, type 2. Then type 32 for the United States and then 4 for the Nasdaq.

Notice the datatypes:

**PI**: Price Index
**PH**: Price High
**PL**: Price Low

In your macro you can enter each code with the type, for instance "NASCOMP(PI)", or if you download many indices of the same dataype, you can change the send line as follows:

```
SEND("900B" +CODE+ "(DY),01/01/80,,D")
```

# VI

An easy way to have a rough idea of the data is to plot them in a GRAPH. In Datastream you have several types of graph. Click on Graphics in the type of Request window, then choose Economics in the Type of data window, and User created graph in the Program available window.

```
DATASTREAM 401X        FLEXIBLE GRAPH - OPTIONS

ENTER ? WHERE HELP REQUIRED


   OPTION REQUIRED        C=CREATE, D=DISPLAY, A=AMEND, E=ERASE, L=LIST
   FORMAT CODE            FOR DISPLAY, AMEND, ERASE OR LIST OPTIONS



 FOR LIST OPTION ONLY

   FORMAT ACCESS T     T=TERMINAL, C=COMPANY, G=GLOBAL
   SORT BY  F    F=FORMAT CODE, A=ASCENDING DATE, D=DESCENDING DATE
   ONLY FORMATS                               IN THE FORMAT TITLE
   START AT DATE
   VIEW ONLY  N    Y=YES, N=NO
```

Digit C, for we want to create a graph. You then obtain the graph option page. You can plot up to 4 series, on two scales. You can also directly input an expression to transform the data. For instance to advance the price of OIL by 24 month use the command LAG#(Expression,Period). *To lag type a − in front of the period*.

```
DATASTREAM 401X        FLEXIBLE GRAPH - FIRST CHART        28/01/02
 PROGRAM :                        (TYPE 300A FOR EXPRESSION FACILITIES)
 ENTER ? FOR HELP OR ! FOR SECURITY CODES     CHART  SCALE

 CODE OR EXPRESSION              TYPE  L/R/B  LEGEND
 1. OCDOCSUNE                                L

 2. LAG#(UKI76AAZA,24M)                      R

 3                                           L

 4.                                          L

 PLOT FREQUENCY M   START DATE 1/1/77__  END DATE _____
 Y SCALE LOG/LIN  LIN   GRID REQUIRED  NO__   X AXIS  YES  Y AXIS  YES
    L.H. SCALE: Y AXIS RANGE      _____ TO _____
    R.H. SCALE: Y AXIS RANGE      _____ TO _____
 GRAPHICAL AREA - X COORDINATES 1,100__   Y COORDINATES  1,100__
 GRAPH TITLE
 DATA REBASED _    DATA DISPLAYED  NO__   NO. OF DEC. PLACES  2
 NUMBER OF GRAPHS ON ONE SCREEN  1                 DATE DISPLAY
 SCREEN TITLE IF MORE THAN ONE GRAPH            N = SUPPRESS
```

You can also calculate correlations, covariances and regression coefficients directly in Datastream. As for the previous graph, those instruments are useful to have quick numerical intuitions.

# VIII

Here a list of Useful Commands. To find the data codes you may want to access an help screen:

| Subject | Command |
|---|---|
| Bond indices | Help BOND? |
| Country codes databases | Help CC? |
| Commodity price mnemonics | Help CO? |
| Datastream codes and mnemonics | Help CODE? |
| Currency codes | Help CUCD? |
| Currency lists | Help CULI? |
| Economic Indicators | 150Z |
| Equity lists | Help EQLI? |
| Exchange rate codes | Help ER? |
| Futures codes | Help FUT? |
| Interest rates | Help IR ? |
| Stockmarket indices | Help SI? |
| Traded options codes | Help TOCD? |
| I/B/E/S Services | Help IBES? |

The commonly used Programs are:

**CODE**: to find data codes by keyword, especially equities
**900A**: Allows retrieval of up to ten items for a list at one date only
**900B**: generates a list of data for a single series over a period of time
**401A**: Make a line chart of up to three series
**401X**: Create your chart of up to four series
**150F**: Displays economic indicators by country
**284A**: Displays capital issues & change
**28A**: Displays recent values and ranges for up to three series

Some useful Expressions:

**/** (divide)

**+** (Add)

**\*** (multiply)

**-** (subtract)

**~** (currency conversion)

**( )** (brackets)

**ABS#(Expression)** :gives absolute value of a series.
**AVG#(Expression, start date, end date)** : gives the average.
**CFx#(expression,MAX)**: finds the maximum value for a specific calendar period given by x. (if x=W, you have the maximum over the week).
**CxA#(expression):** finds the average value for a calendar period.
**CORR#(Variable1,Variable2,period/frequency)**: gives the correlation.
**COVA#(Variable1,Variable2,period/frequency)**: gives the covariance.

You have expressions to obtain the coefficients of a regression, the residuals of a regression, you can seasonally adjust a series, etc…