

SAS/ETS[®] 14.3

User's Guide

The SASEXFSD Interface

Engine

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Chapter 56

The SASEXFSD Interface Engine

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Overview: SASEXFSD Interface Engine

The SASEXFSD interface engine enables SAS users to access both FactSet data and FactSet-sourced data that are provided by the FactSet OnDemand service (formerly known as FASTFetch). This service provides access to many FactSet Data Sources and to many other databases. This chapter focuses on accessing the FactSet Fundamentals database, but additional databases and data types are available for use with the SASEXFSD interface engine. For a more comprehensive list of available data, enter the following URL in your web browser:

<http://www.factset.com/data/data>

For detailed descriptions of other databases that you can access, refer to the FactSet workstation Online Assistant.

The SASEXFSD engine uses the LIBNAME statement to specify which factlet (provided by FactSet) to use to open a database and what parts of the database to access. Factlets are functions that encapsulate business logic and data collection procedures. The technology is capable of cross referencing and dealing with time series for a large amount of data.

To specify the factlet, name one of the supported factlets that are listed in [Table 56.1](#). [Table 56.5](#) shows where to find a summary of each factlet's options.

Table 56.1 Supported FactSet OnDemand Factlets

Supported Factlet	Example
ExtractEconData	Example 56.1 , Example 56.2
ExtractEconData (cont.)	Example 56.3 , Example 56.4 , Example 56.5
ExtractFormulaHistory	Example 56.6 , Example 56.7 , Example 56.8
ExtractDataSnapshot	Example 56.9 , Example 56.10
ExtractBenchmarkDetail	Example 56.11 , Example 56.12
ExtractOFDBItem	Example 56.13
ExtractOFDBUniverse	Example 56.14
ExtractScreenUniverse	Example 56.15

The Prefix column in [Table 56.2](#) contains the parameters that you are most likely to refer to when requesting data, but each factlet has its own set of optional parameters and default settings. Often the items that you select use a prefix (see the Prefix column) to designate the database where the item resides. Because the availability of data libraries and their contents are constantly changing, [Table 56.2](#) is included for instructional purposes only.

Table 56.2 Sample Databases Available through FactSet

Prefix	Database
ff	FactSet Fundamentals
fe	FactSet Estimates
fg	FactSet Global
p	FactSet Prices—Security Price Data

Table 56.2 shows only a subset of the available FactSet databases. For a more comprehensive list that also includes third-party databases available through FactSet, refer to the FactSet Online Assistant, page ID 2014.

To specify the data library, specify both a physical path to indicate the location of the data files (XML data returned from FactSet OnDemand) and the LIBNAME statement options to specify which factlet to use to request data items and the desired key IDs (identifiers, such as tickers or country codes) for your selection. The orientation of the data that are returned is ETI, entity-time-item, and is kept with sorted keys (entities or BY groups); each observation is indexed by time interval, and each time series data item is organized in columns by item name (time series variable name). The SASEXFSD engine supports the parameters that are required for each supported factlet.

Use the SASEXFSD engine to access all available data library items. To get started, look at the FactSet Fundamentals data items in Table 56.3.

For a complete list of data items for every category, refer to the FactSet Online Assistant, page ID 16331. FactSet workstation user name and serial number credentials are necessary to launch the FactSet Online Assistant from the FactSet workstation. A FactSet representative can provide these credentials.

Because the availability of data libraries and their contents are constantly changing, Table 56.3 is included for instructional purposes only. At the time of this writing, the available data list and items for the FactSet Fundamentals database are as shown in Table 56.3.

Table 56.3 FactSet Fundamentals Database Sets

Formulas by Category	Data Items (SAS Variable Names) in Category
Identifiers	FF_CUSIP, FF_DISCL_ID, FF_ISIN, FF_SEDOL, FF_TICKER, FF_WS_ID
Balance sheet	FF_ASSETS, FF_BDEBT, FF_GW, FF_INVEN_FG, FF_PPE_DEP, FF_PPE_GROSS, FF_PAY_ACCT
Income statement	FF_COGS, FF_DEP_EXP, FF_DIL_ADJ, FF_EBIT, FF_EQ_AFF_INC, FF_EXP_OPER, FF_GROSS_INC
Cash flow	FF_DEBT_CF, FF_DIV_CF, FF_FIN_CF, FF_CAPEX, FF_INVEST_CF, FF_INVEST_PURCH_CF, FF_SALE_ASSAETS_BUS_CF
Ratios	FF_ASSETS_EQ, FF_DEBT_EQ, FF_LIFE_INS, FF_LOAN_ASSETS, FF_NET_CAP_REQUIRE, FF_RD_SALES
Market data	FF_ACQ_DATE, FF_DIV_RATE, FF_ENTITY_TYPE, FF_PRICE_CLOSE, FF_PRICE_HIGH_52WK
Corporate data and classifications	FF_GEN_IND, FF_IND_GRP, FF_MAJOR_SUBIND, FF_SIC_CODE, FF_EMP_NUM
Financial records	FF_ACTG_STANDARD, FF_COVERAGE, FF_CURN_DOC, FF_DEPS_BK, FF_FREQ_CODE, FF_US_GAAP_AVAIL

For a comprehensive list of FactSet Fundamentals data items, refer to the FactSet Online Assistant, page ID 15099. If the page is not found, enter “FactSet Fundamentals” in the search box near the top of the page.

Getting Started: SASEXFSD Interface Engine

To specify the parts of the database that you want to access, you supply two things: the list of IDs for the companies or securities that you want to access, and the list of data items that you want to retrieve.

When accessing company or security data, use the ExtractFormulaHistory factlet. Use the IDS= option to specify the list of IDs that identify the companies that you want to access by specifying the entity ID (such as the ticker symbol) for each company.

For example, the following statements access the FactSet Fundamentals database for monthly sales data (ff_sales) and the Prices database for pricing data (p_price) for IBM (ID='ibm') and for FactSet Research Systems (ID='fds'). To include both IDs in the same request, specify IDS='ibm,fds'; to include both data items in the same request, specify ITEMS='p_price,ff_sales', as follows:

```
options validvarname=any
      sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

LIBNAME myLib sasexfsd "%sysget (FACTSET) "
      DEBUG=on
      FACTLET=ExtractFormulaHistory
      FORMAT=sml
      OUTXML=gstart1
      AUTOMAP=replace
      MAPREF=MyMap
      XMLMAP="%sysget (FACTSET) gstart1.map"
      IDS='ibm,fds'
      ITEMS='p_price,ff_sales'
      DATES='20110130:20110631:m'
      ORIENTATION=eti
      user='XXXXXXXXXXXXXXXXXX'
      pass='XXXXXXXXXXXXXXXXXX';
;

data company_pvol;
      set myLib.gstart1;
run;

proc contents data=company_pvol; run;
proc print data=company_pvol; run;
```

Figure 56.1 Getting Started with ExtractFormulaHistory: Company_pvol

Obs	FQL_ENTITY	date	p_price	ff_sales
1	ibm	01-31-2011	162.000	99870.00
2	ibm	02-28-2011	161.880	99870.00
3	ibm	03-31-2011	163.070	99870.00
4	ibm	04-30-2011	170.580	99870.00
5	ibm	05-31-2011	168.930	99870.00
6	ibm	06-30-2011	171.550	99870.00
7	fds	01-31-2011	100.800	641.06
8	fds	02-28-2011	104.880	641.06
9	fds	03-31-2011	104.730	641.06
10	fds	04-30-2011	109.410	641.06
11	fds	05-31-2011	110.860	641.06
12	fds	06-30-2011	102.320	641.06

The SASEXFSD engine supports only the SAS XML (SML) format and the ETI orientation. The XML data that are returned from the FactSet OnDemand service are placed in a file specified by the OUTXML= option. The XML map that is automatically created is assigned the full pathname specified by the XMLMAP= option, and the fileref that is used for the map assignment is specified by the MAPREF= option. In the preceding example, the SASEXFSD engine uses the MAPREF= and XMLMAP= options in the FILENAME statement to assign a filename:

```
FILENAME MyMap "/sasusr/playpens/saskff/factset/gstart1.map";
```

You can use the MAPREF= and XMLMAP= options to control where the map resides, what you name the map, and how you refer to it with a fileref. You can use the OUTXML= option to name your XML data file; this is described in the section “[SAS OUTXML File](#)” on page 3844. This data file is placed in the folder designated by “physical-name”, which is described in the section “[The LIBNAME libref SASEXFSD Statement](#)” on page 3828. You can refer to your data by using the myLib libref in your SASEXFSD LIBNAME statement. In the preceding program, this statement appears inside the DATA step in the SET statement, which names the input data set myLib.gstart1 and causes the reading of the *GSTART1.xml* file to be input and stored in the SAS data set Company_pvol.

The Company_pvol data set contains two time series variables (data items), p_price and ff_sales, as specified in the ITEMS= option, and the observation range is controlled by the DATES= option. The prefixes, ff_ and p_, are the database designators for the FactSet Fundamentals and Prices databases, respectively, as shown in [Table 56.2](#). The Company_pvol data set contains observations that range from January 30, 2011, to June 31, 2011, as specified in the DATES= option. The frequency of the data is monthly, as specified by the “m” at the end of the DATES= option. [Figure 56.1](#) shows the results.

To specify the list of data items that you want to retrieve, use the `ITEMS=` option. This option accepts a string, enclosed in single quotation marks, that denotes a list of data items that you are selecting for the resulting SAS data set. The data item names are separated by commas, so valid item names cannot contain embedded commas or quotation marks. The prefix in each data item name designates the data source as defined in the Prefix column of [Table 56.2](#).

After the libref is assigned by the `LIBNAME` statement, the database is opened. The selected data are organized into group entities (BY groups) that are sorted by date. In [Figure 56.1](#), the tickers are the BY groups, and within each ticker, the observations are sorted by the time ID variable `DATE`.

You can also use the SAS DATA step to perform further subsetting and to store the resulting time series in a SAS data set.

The SASEXFSD engine is supported on 64-bit Windows and Linux X64 (LAX) platforms.

Syntax: SASEXFSD Interface Engine

The SASEXFSD interface engine uses standard engine syntax. [Table 56.4](#) summarizes the options that the SASEXFSD engine supports. In addition, there are two required options: `USERNAME='fact_username'` and `PASS='fact_password'`.

Table 56.4 Summary of LIBNAME *libref* SASEXFSD Options

Option	Description
CAL=	Specifies the calendar that replicates the PSETCAL function
CONNECT=	Specifies whether or not you need the connect method for a secure connection via a proxy server. You must specify the PROXY= option when you use the CONNECT=ON option. See the PROXY= option.
CONV=	Specifies the conversion technique for aggregating periods, when a data series of a higher frequency is converted to a lower frequency; for example, converting a quarterly series to an annual series (such as SUM, AVERAGE, or AVERAGENP)
CURRENCY=	Specifies a currency in which the data are returned, using a three-character ISO code, such as USD for US dollars or EUR for euros
DATE=	Specifies one date in 'YYYYMMDD' format (default is 0B, for today's date)
DATES=	Specifies a list with the start date, end date, and frequency, separated by colons (:)
DBSOURCE=	Specifies a standardized database source name, such as EWIN_ECON, GI_ECON, OECD_MEI, FDS_ECON, FDS_COM, or the default, a null string, which uses the standardized economic data (EWIN_ECON_RGDPR_Y)
DEBUG=	Specifies whether or not to include diagnostic message logging in the SAS log window
DIST=	Specifies the distribution technique for spreading over periods when a data series of a lower frequency is distributed to a higher frequency; for example, distributing an annual series to a quarterly series (such as STEP, EVEN, or NONE)
END=	Specifies the end date for the selected data range (in 'YYYYMMDD' format)
FACTLET=	Specifies which factlet you want to use. For the complete list, see Table 56.5 .
FORMAT=	Specifies a FactSet format. Only SAS XML format (SML format) is supported.
FQLFLAG=	Sets dates to use FQL instead of screening; FQLFLAG=N (default) or Y
FREQ=	Specifies the reporting frequency of the selected data, such as M for monthly and D for daily. For the complete list of frequencies, see Table 56.20 .
FUNCTION=	Adds the FQL function property to change data value; for example, FUNCTION=ZSCORE
IDS=	Specifies a list of FactSet keys or entity identifiers for accessing FactSet OnDemand data. To select more than one ID, list the unique entity identifiers separated by commas.
ISON=	Specifies whether the company (security), such as SP500 or MSCI_WORLD, is on the specified database or index. For a list of additional ISON= option examples, refer to the FactSet Online Assistant, page ID 2014.
ISONPARAMS=	Specifies the parameters used by the ISON code
ITEM=	Specifies one FactSet data item name (time series name)
ITEMS=	Specifies a list of FactSet data items for accessing FactSet data sources. To select more than one item, list the data item names, separated by commas.
NAME=	Specifies whether to see the names of each security along with the CUSIP
NFB=	Specifies the “no-feel-back” option in FQL codes. If you do not use the NFB= option, the returned data series contains NAs where the data are not available (default is NFB=1).
OFDB=	Specifies the OFDB filename
ORIENTATION=	Specifies the layout of the selected data items for access. Only the ETI (entity-time-item) orientation is supported.
PERIOD=	Specifies the time interval between the data points (observations) in a time series. The valid period parameters are ANN, QTR, SEMI, MON, YTD, YTD_SEMI, LTM, LTM_SEMI, and SEMI-ANN. The default is ANN.

Table 56.4 *continued*

Option	Description
PROXY=	Specifies the proxy server that you want to use (if you have trouble connecting without specifying a proxy). If you also need the connect method for a secure connection, use the CONNECT=ON option in addition to the PROXY= option. See the CONNECT= option.
SCREEN=	Specifies the screen file that contains a single user-defined screen for viewing CUSIPs
START=	Specifies the start date for the selected data range (in 'YYYYMMDD' format)
UNIVERSE=	Specifies the one account or benchmark. Use this instead of the IDS= option.
UNIVERSEGROUP=	Default value is EQUITY; for DEBT securities, use UNIVERSEGROUP=DEBT

The LIBNAME libref SASEXFSD Statement

LIBNAME *libref* **SASEXFSD** '*physical-name*' **FACTLET**=*fact_factletname options* ;

The LIBNAME statement assigns a SAS library reference (libref) to the physical path of the directory of FactSet data files where the downloaded FactSet XML data are stored. Because the required '*physical name*' argument specifies the location of the folder where your FactSet XML data reside, it should end in a backslash if you are in a Windows environment and a forward slash if you are in a UNIX environment.

FACTLET=*fact_factletname* specifies the FactSet factlet that you want to use to download your data. Choose one factlet from these possible values: ExtractEconData, ExtractFormulaHistory, ExtractDataSnapshot, ExtractBenchmarkDetail, ExtractOFDBItem, ExtractOFDBUniverse, and ExtractScreenUniverse. (See [Table 56.1](#).)

For example, the following statements access the FactSet database for daily dividend yield data for IBM:

```
LIBNAME myLib SASEXFSD 'physical-name' FACTLET==ExtractFormulaHistory
      IDS='ibm'
      ITEMS='FG_DIV_YLD'
      FREQ=d
      USER='username'
      PASS='password' ;
```

After the libref is assigned, you can access the data items for the IDs (keys) from the requested factlet.

You can specify the following *options* in the LIBNAME *libref* SASEXFSD statement.

FACTLET=*fact_factletname*

Each factlet type has its own set of parameters (shown in [Table 56.5](#) in the Factlet Options Table column), allowing flexibility and easy access to FactSet data. For more details about each factlet, refer first to the Factlet Description Section listed in [Table 56.5](#). If you need more information, refer to the Online Assistant, page ID 16948. If the factlet is not listed on that page, then enter the factlet name in the search window of the Online Assistant to retrieve additional information about using the factlet.

Table 56.5 Summary of Factlet Options

Factlet Name	Factlet Description Section	Factlet Options Table
ExtractEconData	"The ExtractEconData Factlet" on page 3833	Table 56.10
ExtractFormulaHistory	"The ExtractFormulaHistory Factlet" on page 3836	Table 56.12
ExtractDataSnapshot	"The ExtractDataSnapshot Factlet" on page 3837	Table 56.13
ExtractBenchmarkDetail	"The ExtractBenchmarkDetail Factlet" on page 3838	Table 56.15
ExtractOFDBItem	"The ExtractOFDBItem Factlet" on page 3840	Table 56.16
ExtractOFDUniverse	"The ExtractOFDUniverse Factlet" on page 3841	Table 56.17
ExtractScreenUniverse	"The ExtractScreenUniverse Factlet" on page 3841	Table 56.18

IDS=*fact_ids*

specifies a list of FactSet IDs (entity identifiers or keys) for accessing FactSet OnDemand data. To select more than one ID, list the unique entity identifiers, separated by commas (as shown in the following statements). Examples of FactSet IDs include CUSIPs, tickers, SEDOLs, Quick Code, and CINS (CUSIP International Numbering System). For more information, see [Example 56.6](#) and [Example 56.7](#).

```
LIBNAME myLib sasexfsd 'physical-name'
  ids='IBM,MSFT'
  ITEMS='p_price,p_volume,ca_sales';
```

UNIVERSE=*fact_uni*

specifies the universe of securities that passes the specified screening criteria. Up to 500 securities can be returned when this option is specified together with the FACTLET=ExtractFormulaHistory option. This limit is due to the US_UNIV function that is used within the ExtractFormulaHistory factlet to fetch the universe. You can also specify this option together with the FACTLET=ExtractDataSnapshot option, but because the data that are returned as of one specified date, there is no limit on the number of securities that can be returned.

```
LIBNAME myLib sasexfsd 'physical-name'
  factlet=ExtractFormulaHistory
  universe="URANKX( (FS_PARENT_EQUITY=CUSIP AND EC_MKT_CAP(0, 'CUR=USD') >10
    AND P_PRICE(0,USD) >5 AND CONTAINS(P_EXCOUNTRY, 'UNITED STATES'))=1,
    EC_MKT_CAP(0, 'CUR=USD') ) <=500S"
  items='p_price(0,-4,M)';
```

ITEMS=*'fact_itemlist'*

specifies the items and groups of interest for selection based on IDs (keys). Use FactSet's Formula Lookup for a complete list of data items, which is described in the FactSet Online Assistant.

Because the availability of data libraries and their contents are constantly changing, the following tables are included for instructional purposes only. Many other databases are available that are not shown in [Table 56.6](#) to [Table 56.9](#).

Table 56.6 Some FactSet Data Items

Data Source	Table Reference	Online Assistant Page ID
FactSet Fundamentals Data Items	Table 56.7	Page ID 15099
FactSet Global Formula Library	Also see Online Assistant Sidebar	Page IDs 13299, 16664
FactSet Global Indices Formulas	Table 56.8	Page ID 14336
Global Constituents Formulas	Table 56.9	Page ID 15086

Table 56.7 Some FactSet Fundamentals Data Items

Data Source	Online Assistant Page ID
Consolidated Items (FF_)	Page ID 16331
Debt Capital Structure	Page ID 16235
Enhancements to Legacy Formulas	Page ID 16248
Annual Items (FA_)	
Balance Sheet	Page ID 15120
Income Statement	Page ID 15121
Funds Flow Statement	Page ID 15122
Financial Ratios	Page ID 15123
Per Share and Valuation	Page ID 15124
Multiple Share Information	Page ID 15125
Accounting Policies and Methods	Page ID 15126
Segment Data	Page ID 15127
Monthly Items (FM_)	
Monthly Data	Page ID 15128

Table 56.8 FactSet Global Indices Formulas

Data Source	Online Assistant Page ID
Using FG Indices Formulas	Page ID 14337
Database Descriptions for Global Indices	Page ID 14338

Table 56.9 Global Constituents Formulas

Global Constituents Formula	Items
Benchmark Constituent Classification	FG_CONST_CLASS
Benchmark Constituent Country	FG_CONST_COUNTRY
Benchmark Constituent Currency	FG_CONST_CURRENCY
Benchmark Constituent Date	FG_CONST_DATE
Benchmark Constituent Float Factor	FG_CONST_FLOAT_FACTOR
Benchmark Constituent Identifier	FG_CONST_IDENTIFIER
Benchmark Constituent Latest Update	FG_CONST_UPDATE
Benchmark Constituent Market Value	FG_CONST_MCAP
Benchmark Constituent Name	FG_CONST_NAME
Benchmark Constituent Price	FG_CONST_PRICE
Benchmark Constituent Shares	FG_CONST_SHARES
Benchmark Constituent Style Factor	FG_CONST_STYLE_FACTOR
Benchmark Constituent Total Return - 1 Day	FG_CONST_TRET_1D
Benchmark Constituent Valuation	FG_CONST_VALUATION
Benchmark Constituent Weights	FG_CONST_WEIGHT
Benchmark Constituents	FG_CONSTITUENTS

For more information, see the FactSet Online Assistant, page ID 1931. To see each data source's list of available data items, use the search feature of the FactSet Online Assistant. You can open any page in the FactSet Online Assistant by entering the appropriate page ID number in the page ID window, which is located below the search window.

DATES=*'fact_startdate:fact_enddate:fact_freqcode'*

specifies the start date, end date, and frequency, separated by colons (:). For more information, see the section “[Specifying Date Ranges and Frequency Codes](#)” on page 3844. An alternative to using the DATES= option is to use the START=, END=, and FREQ= options.

DEBUG=ON | OFF

specifies whether or not to include diagnostic message logging in the SAS log window. This information can be very useful for troubleshooting a problem.

PERIOD=*fact_period*

specifies the periodic frequencies of the actual data points (observations) in a time series. The valid period parameters are ANN, QTR, SEMI, MON, YTD, YTD_SEMI, LTM, LTM_SEMI, and SEMI-ANN. The default is ANN.

OUTXML=*fact_xmlfile*

specifies the name of both the XML file (downloaded from the FactSet OnDemand service) and the SAS data set created when the XML data are read into SAS. You can use the OUTXML= option to name your XML data file, which is placed in the current working directory. By default, OUTXML=FAST, which creates a file named FAST1.xml in the current working directory. The SAS data set created when the XML data are read into SAS is placed in the folder specified by the physical path in the LIBNAME libref SASEXFSD statement.

AUTOMAP=*fact_automap*

specifies whether to overwrite the existing XML map file (AUTOMAP=REPLACE) or whether not to overwrite the existing XML map file (AUTOMAP=REUSE). You can set *fact_automap* to REUSE so that a pre-existing XML map named by the XMLMAP= option is used. You can set *fact_automap* to REPLACE so that the most current XML map generated by the SASEXFSD engine and named by the XMLMAP= option is used.

XMLMAP=*fact_xmlmapfile*

specifies the fully qualified name of the file where the XML map is automatically stored.

MAPREF=*fact_xmlmapref*

specifies the fileref to be used for the map assignment.

You can use the MAPREF= and XMLMAP= options to control where the map resides, what you name the map, and how you refer to it with a fileref. You can use the OUTXML= option to name your XML data file. This data is read into SAS and placed in a SAS data set in the folder designated by “physical-name”, and you can reference it by using the myLib libref in your SASEXFSD LIBNAME statement. This is shown in the section “[Getting Started: SASEXFSD Interface Engine](#)” on page 3824. The following FILENAME statement is generated by the SASEXFSD interface engine by using the fileref, MyMap, from the MAPREF=MyMap option and from the fully designated filename in the XMLMAP= option:

```
FILENAME MyMap "/sasusr/playpens/saskff/factset/gstart1.map";
```

FORMAT=*fact_xmlformat*

specifies the SAS XML (SML) format, which is the only format that the SASEXFSD engine supports.

ORIENTATION=*fact_xmlorient*

specifies the ETI orientation, which is the only orientation that the SASEXFSD engine supports. The ETI orientation means that the data are returned and stored in entity-time-item logical layout.

PROXY=*“fact_proxyserver”*

specifies which proxy server to use. This option is not required. The specified proxy server is used only when a connection-refused error or a connection-timed-out error occurs. For *fact_proxyserver*, specify the server’s HTTP address followed by a colon and the port number, and enclose that string in double quotation marks; for example, PROXY="http://inetgw.unx.sas.com:8118". See also the [CONNECT=](#) option.

CONNECT=ON | OFF

specifies whether or not to use the connect method along with the PROXY= option. **NOTE:** You must use the PROXY= option and specify your proxy server in addition to the CONNECT=ON option when you want to use the connect method. For more information about a secure connection, see the [PROXY=](#) option.

USERNAME=*‘fact_username’*

specifies the FactSet user name that enables you to access the data provided by the FactSet OnDemand service.

PASS='fact_password'

specifies the password that is paired with the user name to enable you to access the data provided by the FactSet OnDemand service. **NOTE:** These FactSet OnDemand user name and password credentials are different from your FactSet workstation login credentials. A FactSet representative can provide these credentials.

The ExtractEconData Factlet

The ExtractEconData factlet provides access to a broad array of macroeconomic content, interest rates and yields, country indices, and various exchange rate measures from both the FactSet Economics and the Standardized Economic databases. The ExtractEconData factlet uses the options listed in [Table 56.10](#) to extract Economic data items for a list of country IDs or for no country IDs over time.

The DBSOURCE= option specifies a standardized database source name, such as EWIN_ECON, GI_ECON, OECD_MEI, FDS_ECON, FDS_COM, or the default, a null string, which uses the Standardized Economic data (EWIN_ECON_RGDPY_Y). Use the IDS= option to specify one or more country IDs based on the database source. For the complete list of country IDs that work with the standardized codes for the FactSet Economics database, see [Table 56.11](#).

Use the ITEM= option to specify an FQL item based on the database source. You can also use the ITEM= option with the downloading syntax for Economic Request Codes described in the FactSet Online Assistant, page ID 11794, and shown in [Example 56.2](#). [Example 56.2](#) uses the shorthand FQL syntax in the ITEM= option to retrieve the same time series data items.

The SASXFS engine supports retrieval of the following FQL_entities: ECON_EXPR_DATA, SPEC_ID_DATA, FDS_ECON_DATA, EIU_ECON_DATA, CNS_ECON_DATA, EURO_STAT_DATA, IBJ_NIKKO_DATA, IMF_IFS_DATA, NTCS_ECON_DATA, OECD_OTLK_DATA, OECD_MEI_DATA, ONS_ECON_DATA, TCB_BCI_DATA, TCB_CCI_DATA, CEIC_ECON_DATA, and CEIC_CHINA_DATA.

A FactSet representative can provide you with permissions to access the databases that contain the time series data that you are interested in. For an example of using ECON_EXPR_DATA, see [Example 56.3](#). For more information about using ECON_EXPR_DATA and SPEC_ID_DATA, see the section “Downloading Economic Function Codes to Excel” in the FactSet Online Assistant, page ID 12308. You can replace options such as START=, END=, FREQ=, CONV=, DIST=, NFB=, and FUNCTION= by using the corresponding placement of each option’s value in the FQL downloading syntax. In this example, ITEM="FDS_ECON_DATA('FRBIPSB50001', -121,-1,m,step,average)" gives the database source name (FDS_ECON), time series name (FRBIPSB50001), start and end dates, monthly frequency, distribution (step), and conversion (average); no-fail-back defaults to 1.

For the complete list of the data series codes available with the standardized FactSet Economics database, see the ExtractEconData appendix, linked in the FactSet Online Assistant, page ID 16948. The data are available at monthly, quarterly, and annual frequencies, as denoted by the _M, _Q, and _Y suffixes in the code.

Use the FREQ= option to specify the frequency of the data, and use the DATES= option to specify a date range for selecting time series data. For more information, see the section “Frequency” in the FactSet Online Assistant, page ID 11794.

You can use the CONV= option to specify CONV=SUM, AVERAGE, AVERAGENP, or none (the default is none).

You can use the DIST= option to specify DIST=STEP (step distribution), EVEN, or none (the default).

You can use the NFB= option to specify your no-feel-back setting (0, 1, or 2) to indicate full feel-back, no feel-back (the default), or feel-back until most recent data point, respectively (do not fill in data past the last available data point).

You can use the FUNCTION= option to apply an economic function to the data values of the time series (such as FUNCTION=ZSCORE). For a list of economic functions, see the FactSet Online Assistant, page ID 12308.

The ORIENTATION= option supports only ETI, which is the default.

Table 56.10 ExtractEconData Factlet Options

Option	Description
IDS=	Specifies a string array with a list of the country identifiers from the Standardized Economic database
ITEMS=	Specifies the economic series mnemonic (for example, US GDP database source [mnemonic] is FDS_ECON[BEANIPAA191RL1@US])
DATES=	Specifies a date string such as 'YYYYMMDD:YYYYMMDD:F' or relative dates '-1b:-4b:m'
START=	Specifies the numeric start date in 'YYYYMMDD' format
END=	Specifies the numeric end date in 'YYYYMMDD' format
FREQ=	Specifies the valid FQL frequencies, such as M, D, W, Q, and Y. Note: For economic request codes, a frequency argument is necessary to retrieve the data.
DBSOURCE=	Specifies a standardized database source name, such as EWIN_ECON, GI_ECON, OECD_MEI, FDS_ECON, FDS_COM, or the default, a null string, which uses the Standardized Economic data (EWIN_ECON_RGDPR_Y)
CONV=	Specifies the conversion technique for aggregating periods, when a data series of a higher frequency is converted to a lower frequency; for example, you can use this option to convert a quarterly series to an annual series (for example, SUM, AVERAGE, or AVERAGENP, which excludes NAs).
DIST=	Specifies the distribution technique for spreading over periods when a data series of a lower frequency is distributed to a higher frequency; for example, you can use it to distribute an annual series to a quarterly series (such as STEP, EVEN, or NONE).
NFB=	Specifies the optional “no-feel-back” argument in FQL codes. If you do not specify the NFB= option, the returned data series contains NAs where the data are not available (default is NFB=1). If you want the data to “feel back” over NAs to find the last actual data point and carry these data forward, specify either NFB=0 or NFB=2.
FUNCTION=	Adds FQL function property to change data value; for example, FUNCTION=ZSCORE
ORIENTATION=	Specifies an optional orientation (default is ETI, entity-time-item)

Table 56.11 Country Identifiers

Country	Country ID	Country	Country ID
Argentina	CC_AR	Lithuania	CC_LT
Australia	CC_AU	Luxembourg	CC_LU
Austria	CC_AT	Malaysia	CC_MY
Azerbaijan	CC_AZ	Malta	CC_MT
Bangladesh	CC_BD	Mexico	CC_MX
Belarus	CC_BY	Morocco	CC_MA
Belgium	CC_BE	Netherlands	CC_NL
Bolivia	CC_BO	New Zealand	CC_NZ
Brazil	CC_BR	Nigeria	CC_NG
Bulgaria	CC_BG	Norway	CC_NO
Canada	CC_CA	Pakistan	CC_PK
Chile	CC_CL	Panama	CC_PA
China	CC_CN	Paraguay	CC_PY
Colombia	CC_CO	Peru	CC_PE
Costa Rica	CC_CR	Philippines	CC_PH
Croatia	CC_HR	Poland	CC_PL
Cyprus	CC_CY	Portugal	CC_PT
Czech Republic	CC_CZ	Romania	CC_RO
Denmark	CC_DK	Russia	CC_RU
Dominican Republic	CC_DO	Saudi Arabia	CC_SA
Ecuador	CC_EC	Singapore	CC_SG
Egypt	CC_EG	Slovakia	CC_SK
Estonia	CC_EE	Slovenia	CC_SI
Finland	CC_FI	South Africa	CC_ZA
France	CC_FR	South Korea	CC_KR
Germany	CC_DE	Spain	CC_ES
Greece	CC_GR	Sri Lanka	CC_LK
Hong Kong	CC_HK	Sweden	CC_SE
Hungary	CC_HU	Switzerland	CC_CH
Iceland	CC_IS	Taiwan	CC_TW
India	CC_IN	Thailand	CC_TH
Indonesia	CC_ID	Turkey	CC_TR
Ireland	CC_IE	Ukraine	CC_UA
Israel	CC_IL	United Kingdom	CC_GB
Italy	CC_IT	United States	CC_US
Japan	CC_JP	Uruguay	CC_UY
Jordan	CC_JO	Uzbekistan	CC_UZ
Kazakhstan	CC_KK	Venezuela	CC_VE
Latvia	CC_LV	Vietnam	CC_VN

The ExtractFormulaHistory Factlet

The ExtractFormulaHistory factlet is used for extracting one or more items for one security, for an index, or for a list of securities over time. ExtractFormulaHistory uses the FactSet Query Language (FQL). The ExtractFormulaHistory factlet uses the options listed in [Table 56.12](#), such as the IDS= option, which specifies the IDs for one or more securities, or the ISON= and ISONPARAMS= options, which specify an FQL formula that extracts the universe along with any ISON parameters necessary for the ISON code. You can use the START=, END=, and FREQ= options or the DATES= option to specify a date range for selecting time series data. You can select data items by using the ITEMS= option, but only the name/value pairs syntax (not the standard FQL syntax) is supported. The ITEMS= option designates multiple shortcut items or item/statistic combinations. You can use any instance of the Formula Library for the ITEMS= option.

The PERIOD= option is used for FactSet Fundamentals database codes to specify the estimate period of the data that you want to select. The CAL= option enables you to set your calendar in the same way that the PSETCAL function in FQL works. You can specify the CAL= option to be LOCAL, FIVEDAY, FIVEDAYEOM, SEVENDAY, or an exchange code. The list of exchange codes is available in the FactSet Online Assistant, page ID 16610. The ORIENTATION= option is supported only for ETI (entity-time-item), so that your SAS output data set is organized by key entities such as CUSIP or ticker, by date so that observations are kept in time series order, and by item. ETI is the default setting for orientation.

Table 56.12 ExtractFormulaHistory Factlet Options

Option	Description
IDS=	Specifies one or more securities; for example, IDS=IBM,MSFT,FDS
ISON=	Specifies the FQL value that extracts the universe; for example, ISON_SP500 is entered as ISON=SP500, and ISON_MSCI_WORLD(0,1) is written as ISON=MSCI_WORLD.
ISONPARAMS=	Specifies the ISON codes that use parameters; for example, ISON_MSCI_WORLD(0,1) is written as ISONPARAMS=0,1.
UNIVERSE=	Specifies the universe.
DATES=	Specifies a date string such as 'YYYYMMDD:YYYYMMDD:F' or relative dates -1b:-4b:m
START=	Specifies a valid FQL date; START=0 is the default
END=	Specifies a valid FQL date; END=0 is the default
FREQ=	Specifies a valid FQL frequencies; for example, M, D, Y. See Table 56.20 .
ITEMS=	Specifies one or more FQL items (only the name/value pair syntax is supported; for example, ff_sales, p_price)
PERIOD=	Specifies valid time intervals between the data points (observations) in a time series; for example, ANN, QTR, and SEMI-ANN; PERIOD=ANN is the default.
ORIENTATION=	Specifies an optional orientation (default is currently ETI)
CAL=	Specifies the calendar setting that replicates the PSETCAL function; for example, LOCAL, FIVEDAY, FIVEDAYEOM, and SEVENDAY, for exchange code CAL=AAM (for a list of exchange codes, see the FactSet Online Assistant, page ID 16610)

The ExtractDataSnapshot Factlet

The ExtractDataSnapshot factlet is used for efficiently extracting multiple items as of a single date, for a universe of both equity and fixed income securities. It uses the FactSet Screening Language to extract data for a large universe of securities as of a single date. The ExtractDataSnapshot factlet uses the options listed in [Table 56.13](#), such as the IDS= option, which specifies the IDS for one or more securities, or you can specify fixed securities by using the UNIVERSEGROUP= option. If you want to access only current constituents, use the ISON= option to specify your ISON codes instead of using the IDS= option. If your ISON code uses parameters, then use the ISONPARAMS= option to specify the parameters for the code that you use in your ISON= option. Use DATE=YYYYMMDD to specify the day that your snapshot is for, or use the START=, END=, and FREQ= options for the FQL scalar data item date that you are interested in. Use the ITEMS= option to specify one or more screening items. The SASEXFSD engine does not support the standard screening syntax, so use the name/value pair syntax instead. For example, instead of using ITEMS='FF_SALES(QTR,20110401)', use ITEMS='FF_SALES' PERIOD=QTR REL_DATE=20110401 in your LIBNAME *libref* SASEXFSD statement. Specify the UNIVERSEGROUP= option to choose between the EQUITY group and the DEBT group. The CAL= option enables you to set your calendar in the same way that the PSETCAL function in FQL works. You can specify the CAL= option to be LOCAL, FIVEDAY, FIVEDAYEOM, SEVENDAY, or an exchange code. The list of exchange codes is available in the FactSet Online Assistant, page ID 16610. The ORIENTATION= option is supported only for ETI (entity-time-item), which is also the default.

Table 56.13 ExtractDataSnapshot Factlet Options

Option	Description
IDS=	Specifies one or more securities; for example, IDS='IBM,MSFT'. Fixed securities are used in conjunction with UNIVERSEGROUP=DEBT (for example, IDS=88579EAE).
ISON=	Specifies a screening code that extracts the universe; for example, ISON_SP500 is entered as ISON=SP500, and ISON_MSCI_WORLD(0,1) is entered as ISON=MSCI_WORLD.
ISONPARAMS=	Specifies ISON codes that use parameters; for example, ISON_MSCI_WORLD(0,1) is written as ISONPARAMS=0,1.
DATE=	Specifies one date in the format 'YYYYMMDD' (default is 0B, for today's date)
START=	Specifies a valid start date; START=0 is the default.
END=	Specifies a valid end date; END=0 is the default.
FREQ=	Specifies a valid frequency; for example, M, D, Y. See Table 56.20 .
ITEMS=	Specifies one or more screening items (only the name/value pair syntax is supported)
PERIOD=	Specifies a valid time interval between the data points (observations) in a time series; for example, ANN, QTR, SEMI-ANN; PERIOD=ANN is the default.
UNIVERSEGROUP=	Specifies the universe group. The default value is EQUITY; for DEBT securities, specify UNIVERSEGROUP=DEBT.
ORIENTATION=	Specifies an optional orientation (default is ETI)
CAL=	Specifies a calendar setting that replicates the PSETCAL function; for example, LOCAL, FIVEDAY, FIVEDAYEOM, and SEVENDAY, for exchange code CAL=AAM (for a list of exchange codes, refer to the FactSet Online Assistant, page ID 16610)

The ExtractBenchmarkDetail Factlet

The ExtractBenchmarkDetail factlet is used for retrieving a more comprehensive overview of the index constituent data for a benchmark, without requiring the additional codes and calculations that are needed with the ExtractFormulaHistory factlet. ExtractBenchmarkDetail uses default output in which the identifiers are sorted in descending order by weight in the index, and each row shows the index ID, company ID, date, ticker, and weight. Any additional items are displayed at the end of each row.

The ExtractBenchmarkDetail factlet uses the options that are listed in [Table 56.15](#), such as the IDS= option, which specifies the IDs for one or more benchmarks (indexes). Use DATES='YYYYMMDD:YYYYMMDD:freq' to specify the range of dates in 'start:end:freq' format.

You can designate dates in absolute or relative form, as shown in [Table 56.14](#). Absolute dates specify a day in 'MM/DD/YYYY' format (such as 7/11/1999), a month end in 'MM/YYYY' format (such as 6/1999), a fiscal quarter end in 'YY/FQ' or 'YYY/FQ' format (such as 1999/1F, 2000/3F, or 2001/2F), a calendar quarter end in 'YY/CQ' or 'YYYY/CQ' format (such as 1999/1C, 00/3C, or 2001/1C), or a fiscal year end in 'YY' or 'YYYY' format (such as 2000, 01, or 1999).

Table 56.14 ExtractBenchmarkDetail Factlet Relative Date Arguments

Relative Date Argument	Description
D	0D is the most recent trading day; -1D is one trading day prior.
AW	0AW is the most recent trading day; -1AW is the one actual week (7 days) prior to the most recent trading day.
W	0W is the last day of the most recent trading week (usually Friday); -1W is the last trading day of the prior week.
AM	0AM is the most recent trading day; -1AM is the same day, one actual month prior.
M	0M is the last trading day of the most recent month; -1M is the last trading day of the prior month.
AQ	0AQ is the most recent trading day; -1AQ is the same day 3 months prior.
Q	0Q is the last trading day of the company's most recent fiscal quarter; -1Q is the last day of the prior fiscal quarter.
CQ	0CQ is the last trading day of the most recent calendar quarter (March, June, September, or December); -1CQ is the last trading day of the prior calendar quarter.
AY	0AY is the most recent trading day; -1AY is one actual year (365 days) prior.
Y	0Y is the last trading day of the company's most recent fiscal year; -1Y is the last trading day of the prior fiscal year.
CY	0CY is the last trading day of the most recent calendar year (the last trading day in December); -1CY is the last trading day of the prior calendar year.

Use the ITEMS= option to specify one or more screening items, such as p_price or ca_sales. The CUTOFF= option specifies the number of holdings to show. The default is to show all instances. The optional MATCHDATE= option is used to limit the output to not repeat the dates that “feel back” to a holiday. The default behavior (no MATCHDATE= option) repeats the dates that “feel back” to a holiday. The MATCHDATE= option is always used with a frequency argument set to B, which indicates business days. Use MATCHDATE=ON for better response time and to limit the large amount of data being returned. The UNIVERSEGROUP= option is necessary only when you specify UNIVERSEGROUP=DEBT. By default, UNIVERSEGROUP=EQUITY.

Table 56.15 ExtractBenchmarkDetail Factlet Options

Option	Description
IDS=	Specifies one or more benchmarks; for example, IDS=SP50, R.3000
DATES=	Specifies one or more dates entered in 'start:end:freq' format, '20101215:20100115:d'
ITEMS=	Specifies one or more screening items (such as ITEMS='p_price, ca_sales'). FQL items are named with a preceding underscore.
CUTOFF=	Specifies an optional number of holdings to show; default (no cutoff) displays all instances.
MATCHDATE=	Specifies an optional argument that turns off the default behavior, in which dates are repeated when “feeling back” to a holiday. It is always used with a frequency argument set to B (indicating business days).
UNIVERSEGROUP=	Specifies the universe group. The default value is EQUITY. For fixed income indices, specify UNIVERSEGROUP=DEBT.

The ExtractOFDBItem Factlet

The ExtractOFDBItem factlet provides access to a list of securities and multiple data items for a range of dates uploaded into a single Open FactSet Database (OFDB). An OFDB is a high-performance multidimensional database system that securely stores proprietary numeric and textual data in FactSet. The ExtractOFDBItem factlet uses the options listed in Table 56.16, such as the OFDB= option, which specifies the OFDB file. Use either the IDS= option, which specifies the IDs for one or more securities, or the ISON= and ISONPARAMS= options, which specify an FQL formula (ISON code) that extracts the universe along with any ISON parameters necessary for the ISON code. Use the ITEMS= option to specify one or more items in the OFDB file. Use the DATES= option to specify a date range in 'YYYYMMDD:YYYYMMDD:freq' format, or use FQL dates when FQLFLAG=Y (yes). By default, FQLFLAG=N (no). The DATESONLY= option specifies whether only the dates in the OFDB file are reported. By default, DATESONLY=N. The ORIENTATION= option supports only ETI, which is the default.

Table 56.16 ExtractOFDBItem Factlet Options

Option	Description
OFDB=	Specifies the OFDB file
IDS=	Specifies one or more securities; for example, IDS=IBM, GM
ISON=	Specifies the FQL value that extracts the universe; for example, ISON_SP500 is entered as ISON=SP500, and ISON_MSCI_WORLD(0,1) is written as ISON=MSCI_WORLD.
ISONPARAMS=	Specifies the parameters for the ISON codes that use parameters; for example, ISON_MSCI_WORLD(0,1) is written as ISONPARAMS=0,1.
ITEMS=	Specifies one or more data items from the OFDB file
DATES=	Specifies dates in the format 'YYYYMMDD:YYYYMMDD:F' or relative dates in relative format, such as -1b:-4b:m
DATE=	Specifies one date in the format 'YYYYMMDD' (default is 0B, for today's date)
DATESONLY=	Specifies that dates are reported from the OFDB file only when the option is set to Y (default is N)
FQLFLAG=	Sets dates to use FQL instead of screening; FQLFLAG=N (default) or Y
ORIENTATION=	Specifies an optional orientation (default is currently ETI)

The ExtractOFDBUniverse Factlet

The ExtractOFDBUniverse factlet uses the options that are listed in Table 56.17 to extract a list of CUSIPs that belong to a single OFDB file or ISON code. Use the OFDB= option to specify a OFDB file, and use the DATE= option to specify the date for showing the list of CUSIPs.

Table 56.17 ExtractOFDBUniverse Factlet Options

Option	Description
OFDB=	Specifies the OFDB file
DATE=	Specifies one date in 'YYYYMMDD' format only; DATE="" specifies the most recent date.

The ExtractScreenUniverse Factlet

The ExtractScreenUniverse factlet is used for extracting a list of CUSIPs stored in a single FactSet screen. On the FactSet workstation, a user can screen for equity and fixed income securities based on specified criteria and store a list of companies by using FactSet Universal Screening for equity or debt securities. The ExtractScreenUniverse factlet uses the options that are listed in Table 56.18 to extract a list of CUSIPs that belong to a single user-defined screen. Use the SCREEN= option to specify a screen file, and use the NAME= option to specify whether or not to make the names of the corresponding securities visible. Specify NAME=Y (yes) to view the security names for each CUSIP in the screen. NAME=N (no) is the default, for which security names are not shown with the CUSIP list. Because screen filenames can contain blanks and special characters, enclose the screen filename with single quotation marks:

```
options validvarname=any
  sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

LIBNAME myFast sasexfsd "%sysget (FACTSET) "
  debug=on
  factlet=ExtractScreenUniverse
  screen='factset:1 Week EPS Estimate Revisions - FactSet Consensus'
  name=y
  format=sml
  outXml=sasscrn4
  automap=replace
  mapref=MyMap
  xmlmap="%sysget (FACTSET) sasscrn4.map"
  period=QTR
  user='XXXXXXXXXXXXXXXXXX'
  pass='XXXXXXXXXXXXXXXXXX'
;
```

Table 56.18 ExtractScreenUniverse Factlet Options

Option	Description
SCREEN=	Specifies a screen file
NAME=	Specifies whether security names are to be visible. NAME=Y indicates yes to show names; default is N, indicating that no names are shown.

Details: SASEXFSD Interface Engine

FactSet Data and FactSet Sourced Data

The SASEXFSD interface engine enables SAS users to access both FactSet data and FactSet sourced data that are provided by the FactSet OnDemand service. FactSet OnDemand offerings can provide access to many databases. Because the list of available data is constantly changing, [Table 56.19](#) is included for instructional purposes only. Many other data offerings are available that are not shown in [Table 56.19](#).

Table 56.19 Sample FactSet Data Types

Pricing and IPO Data
Estimates
Broker Research
Commodity Benchmarks
Equity Benchmarks
Fixed Income Benchmarks
Mutual Fund/Account Return Data
Economic Data
Financial News and Events/Corporate Information
Quantitative Data
Options Data
Investment Banking Data
Fixed Income Data
Deal Data
Other Databases

SAS Output Data Set

You can use the SAS DATA step to write the selected FactSet data to a SAS data set. This enables you to use SAS software to easily analyze the data. If you specify the name of the output data set in the DATA step, the engine supervisor creates a SAS data set that has the specified name in either the SAS Work library or, if specified, the User library.

The contents of the SAS data set include the BY groups, the date of each observation, and the series name of each series that is read from the FactSet data source.

The SASEXFSD interface engine sorts the IDs into keys or BY groups, so that the time series are sorted in the resulting SAS data set by key (entity identifier such as a ticker), by date (time ID), and by variable (time series item name).

You can use the PRINT and CONTENTS procedures to print your output data set and its contents. Alternatively, you can view your SAS output observations by opening the desired output data set in a SAS Explorer window. You can also use the SQL procedure with your SASEXFSD libref to create a custom view of your data.

SAS OUTXML File

The SAS XML (SML format) data that are returned from the FactSet OnDemand service are placed in a file named by the OUTXML= option. The SAS XML data are placed in the current working directory. The SAS data set created when the XML data are read into SAS is placed in the location specified by the *physical-name* in the LIBNAME *libref* SASEXFSD statement, which is described in the section “[The LIBNAME *libref* SASEXFSD Statement](#)” on page 3828.

SAS XML Map File

The XML map that is automatically created is assigned the full pathname specified by the XMLMAP= option in your LIBNAME *libref* SASEXFSD statement. The XML map file is either reused (not overwritten) if you specify AUTOMAP=REUSE or overwritten by a new map if you specify AUTOMAP=REPLACE. The SASEXFSD interface engine invokes the XMLV2 engine to create the map and to read the data into SAS.

Specifying Date Ranges and Frequency Codes

When you specify a range of dates for selecting your time series observations, you can specify the range in either absolute or relative dates. The absolute start and end dates are given in 'YYYYMMDD' format and separated by a colon (:). The frequency is given along with the date range and can be any one of the codes shown in [Table 56.20](#). The code frequency indicates the frequency with which you want to display data. Relative dates are relative to the most recently updated period (0). A minus sign (as in -1) represents the period prior to the most recently updated period. The zero date is determined by the natural frequency of the time series data, so a 0 for monthly data represents the most recent month end. Annual data use -1 to represent the fiscal year prior to the most recently updated fiscal year.

Table 56.20 FactSet Frequency Codes

Freq. Code	Description
AD	Displays data on an actual daily basis (that is, all days, not just trading days)
D	Displays data on a daily basis
AW	Displays data weekly, based on the day of the week of the start date
W	Displays data weekly, based on the last day of the completed trading week (usually Friday)
WTD	For a range item (such as price change), displays the week-to-date value. For other items, displays the latest daily value. For the remainder of the time series, displays data weekly, based on the last day of the completed trading week (usually Friday).
AM	Displays data monthly, based on the start date (for example, if the start date is June 16, data are displayed for June 16, May 16, April 16, and so on)
M	Displays data monthly, based on the last trading day of the month
MTD	For a range item (such as price change), displays the month-to-date value. For other items, displays the latest daily value. For the remainder of the time series, displays data monthly, based on the last trading day of the month.
QTD	For a range item (such as price change), displays the calendar quarter-to-date value. For other items, displays the latest daily value. For the remainder of the time series, displays data quarterly, based on the last trading day of the quarter.
CQTD	For a range item (such as price change), displays the calendar quarter-to-date value. For other items, displays the latest daily value. For the remainder of the time series, displays data quarterly, based on the last trading day of the calendar quarter.
FQTD	For a range item (such as price change), displays the fiscal quarter-to-date value. For other items, displays the latest daily value. For the remainder of the time series, displays data quarterly, based on the last trading day of the fiscal quarter.
AQ	Displays data in three-month periods, based on the start date (for example, if the start date is April 7, data are displayed for April 7, January 7, October 7, July 7, and so on)
Q	Displays data quarterly, based on the last trading day of the company's fiscal quarter
CQ	Displays data quarterly, based on the last trading day of the calendar quarter (March, June, September, or December)
FSA	Displays data semiannually, based on the last trading day of the fiscal semiannual period
CSA	Displays data semiannually, based on the last trading day of the calendar semiannual period
ASA	Displays data in six-month periods, based on the start date (for example, if the start date is June, data are displayed for June, January, June (prior), January (prior), and so on)
YTD	For a range item (such as price change), displays the calendar year-to-date value. For other items, displays the latest daily value. For the remainder of the time series, displays data annually, based on the last trading day of the year.
CYTD	For a range item (such as price change), displays the calendar year-to-date value. For other items, displays the latest daily value. For the remainder of the time series, displays data annually, based on the last trading day of the calendar year.
FYTD	For a range item (such as price change), displays the fiscal year-to-date value. For other items, displays the latest daily value. For the remainder of the time series, displays data annually, based on the last trading day of the fiscal year.
AY	Displays data annually, based on the start date (for example, if the start date is October 31, 1995, data are displayed for October 31, 1995, October 31, 1994, October 31, 1993, and so on)
Y	Displays data annually, based on the last trading day of the company's fiscal year
CY	Displays data annually, based on the last trading day of the calendar year

Specifying Currency Codes

Currency is represented by three-character ISO (International Organization for Standardization) codes, such as USD for US dollars or EUR for euros. For a complete list of currency codes, see [Table 56.21](#) and [Table 56.22](#).

Table 56.21 ISO Currency Codes

Currency	ISO Code	Currency	ISO Code
Afghanistan Afghani	AFN	Djibouti Franc	DJF
Albanian Lek	ALL	Dominican Rep. Peso	DOP
Algerian Dinar	DZD	East Caribbean Dollar	XCD
Angolan Kwanza	AOA	East German Ostmark	DDM
Argentine Peso	ARS	Ecuador US Dollar	USD
Armenia Dram	AMD	Egyptian Pound	EGP
Aruban Guilder	AWG	El Salvador Colon	SVC
Australian Dollar	AUD	Estonian Euro	EUR
Austrian Schilling*	ATS	Ethiopian Birr	ETB
Azerbaijan New Manat	AZN	Euro	EUR
Bahamas Dollar	BSD	Euro Floating Rate	EUX
Bahraini Dinar	BHD	European Currency Unit	XEU
Bangladesh Taka	BDT	Falkland Is. Pound	FKP
Barbados Dollar	BBD	Fiji Dollar	FJD
Belarus Rouble	BYR	Finnish Markka*	FIM
Belgian Franc*	BEF	French Euro	EUR
Belize Dollar	BZD	Gambia Dalasi	GMD
Bermuda Dollar	BMD	Georgian Lari	GEL
Bhutan Ngultrum	BTN	German Euro	EUR
Bolivian Boliviano	BOB	Ghana Cedi	GHS
Botswana Pula	BWP	Gibraltar Pound	GIP
Brazilian Real	BRL	Greek Drachma*	GRD
British Pence	GBX	Guatemala Quetzal	GTQ
British Pound	GBP	Guinea Franc	GNF
Brunei Dollar	BND	Guinea-Bissau Peso	XOF
Bulgarian Lev	BGN	Guyana Dollar	GYD
Burundi Franc	BIF	Haiti Gourde	HTG
Cambodian Riel	KHR	Honduras Lempira	HNL
Canadian Dollar	CAD	Hong Kong Dollar	HKD
Cape Verde Is. Escudo	CVE	Hungarian Forint	HUF
Cayman Islands Dollar	KYD	Icelandic Krona	ISK
CFA Franc (C. African)	XAF	Indian Rupee	INR
CFA Franc (W. African)	XOF	Indonesian Rupiah	IDR
CFP Franc	XPF	Iran Rial	IRR
Chile UF	CLF	Iraqi Dinar	IQD
Chilean Peso	CLP	Irish Punt*	IEP
China Yuan Renminbi	CNY	Israeli Shekel	ILS
Colombian Peso	COP	Italian Lira*	ITL
Comoros Franc	KMF	Jamaican Dollar	JMD
Costa Rica Colon	CRC	Japanese Yen	JPY
Croatian Kuna	HRK	Jordanian Dinar	JOD
Cuban Peso	CUP	Kazakhstan Tenge	KZT
Cyprus Pound*	CYP	Kenya Shilling	KES
Czech Koruna	CZK	Kuwait Dinar	KWD
Danish Krone	DKK	Kyrgyzstan Som	KGS

*The local currency and currency code are euro and EUR, respectively.

Table 56.22 Continued

Currency	ISO Code	Currency	ISO Code
Laos New Kip	LAK	Sao Tome and Principe Dobra	STD
Latvian Lats	LVL	Saudi Arabian Riyal	SAR
Lebanese Pound	LBP	Serbian Dinar	RSD
Lesotho Loti	LSL	Seychelles Rupee	SCR
Liberian Dollar	LRD	Sierra Leone Leone	SLL
Libyan Dinar	LYD	Singapore Dollar	SGD
Lithuanian Litas	LTL	Slovakia Koruna*	SKK
Luxembourg Franc*	LUF	Slovenian Tolar*	SIT
Macau Pataca	MOP	Solomon Is. Dollar	SBD
Macedonian Denar	MKD	Somali Shilling	SOS
Malagasy Ariary	MGA	South African Rand	ZAR
Malawi Kwacha	MWK	South Korean Won	KRW
Malaysian Ringgit	MYR	Spanish Peseta*	ESP
Maldives Is. Rufiyaa	MVR	Sri Lanka Rupee	LKR
Maltese Lira*	MTL	St. Helena Pound	SHP
Mauritania Ouguiya	MRO	Sudanese Dinar	SDG
Mauritian Rupee	MUR	Surinam Dollar	SRD
Mexican Peso	MXN	Swaziland Lilangeni	SZL
Moldovan Leu	MDL	Swedish Krona	SEK
Mongolian Tugrik	MNT	Swiss Franc	CHF
Moroccan Dirham	MAD	Syrian Pound	SYR
Mozambique New Metical	MZN	Taiwan Dollar	TWD
Myanmar (Burma) Kyat	MMK	Tajikistan Somoni	TJS
Namibian Dollar	NAD	Tanzania Shilling	TZS
Nepalese Rupee	NPR	Thailand Baht	THB
Netherlands Antilles Guilder	ANG	Tonga Pa'anga	TOP
Netherlands Guilder*	NLG	Trinidad and Tobago Dollar	TTD
New Zealand Dollar	NZD	Tunisian Dinar	TND
Nicaragua Cordoba Oro	NIO	Turkish Lira	TRY
Nigerian Naira	NGN	Turkmenistan Manat	TMT
North Korean Won	KPW	UAE Dirham	AED
Norwegian Krone	NOK	Uganda Shilling	UGX
Oman Rial	OMR	Ukraine Hryvnia	UAH
Pakistan Rupee	PKR	Uruguay Peso	UYU
Panama Balboa	PAB	US Dollar	USD
Papua New Guinea Kina	PGK	Uzbekistan Sum	UZS
Paraguay Guarani	PYG	Vanuatu Vatu	VUV
Peruvian New Sol	PEN	Venezuelan Bolivar Fuerte	VEF
Philippines Peso	PHP	Vietnam Dong	VND
Polish Zloty	PLN	Western Samoa Tala	WST
Portuguese Escudo*	PTE	Yemeni Rial	YER
Qatari Rial	QAR	Zaire Zaire	ZRN
Romanian New Leu	RON	Zambian Kwacha	ZMK
Russian Rouble	RUB	Zimbabwe Dollar	ZWL
Rwanda Franc	RWF		

*The local currency and currency code are euro and EUR, respectively.

Examples: SASEXFS Interface Engine

Example 56.1: Retrieving Standardized Economic Items for Multiple Countries

This example shows how to use the ExtractEconData factlet to retrieve the standardized government debt values, reflecting debt in billions of dollars at year end for the United States and Greece and using the country identifiers CC_US and CC_GR and the standardized FactSet economic code FDS_ECON_GDP_USD_Y.

```
options validvarname=any
      sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Standardized Economic Items for Multiple Countries (US,GR)';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET)"
      debug=on
      factlet=ExtractEconData
      ids='CC_US,CC_GR'
      items='FDS_ECON_GDP_USD_Y'
      dates='-6:-1:y'
      period=QTR
      format=sml
      outXml=fsdex06
      automap=replace
      mapref=MyMap
      xmlmap="%sysget(FACTSET) fsdex06.map"
      orientation=eti
      user='XXXXXXXXXXXXXXXXXX'
      pass='XXXXXXXXXXXXXXXXXX';

data econStnd; set xfsd.fsdex06; run;
proc print data=econStnd; run;
```

Output 56.1.1 Standardized Economic Items for Multiple Countries

Retrieve Standardized Economic Items for Multiple Countries (US,GR)

Obs	FQL_Entity	date	fds_econ_gdp_usd_y
1	CC_US	12-31-2006	13377.20
2	CC_US	12-31-2007	14028.70
3	CC_US	12-31-2008	14291.50
4	CC_US	12-31-2009	13973.70
5	CC_US	12-31-2010	14498.90
6	CC_US	12-31-2011	15075.70
7	CC_GR	12-31-2006	261.85
8	CC_GR	12-31-2007	305.54
9	CC_GR	12-31-2008	341.24
10	CC_GR	12-31-2009	321.34
11	CC_GR	12-31-2010	294.03
12	CC_GR	12-31-2011	290.04

Example 56.2: Retrieving Economic Items by Using the FQL Syntax for Function Z Score

This example shows how to use the ExtractEconData factlet to retrieve the Z score for the GRLM0347861 monthly time series for Greece over the last three years by using the FQL economic download syntax. It is not necessary to use the IDS= option, because all necessary information is contained in the ITEMS= option. The PRINT procedure uses the LABEL option to allow the time series name to be in the column heading in the output. Without the LABEL option, the column heading would be 'ECON_EXPR_DATA'.

```
option validvarname=any
    sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve the Z Score Using ECON_EXPR_DATA for the US CFTNCLOI%ALLNQ100CMEF Series';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET)"
    debug=on
    factlet=ExtractEconData
    items="ECON_EXPR_DATA('ZSCORE(FDS_ECON[GRLM0347861],
-5AY,step,average)',0,0/0/-3,m)"
    format=sml
    outXml=fsdecon8z
    automap=replace
    mapref=MyMap
    xmlmap="%sysget(FACTSET) fsdecon8z.map"
    orientation=eti
    user='XXXXXXXXXXXXXXXXXX'
    pass='XXXXXXXXXXXXXXXXXX';

data FQLeconFunc; set xfsd.fsdecon8z; run;
proc print data=FQLeconFunc(firstobs=1 obs=34) label; run;
```

Output 56.2.1 Z Score Using ECON_EXPR_DATA for the GRLM0347861 Monthly Series for Greece
Retrieve the Z Score Using ECON_EXPR_DATA for the US CFTNCLOI%ALLNQ100CMEF Series

Obs	FQL_Entity	date	ZSCORE(FDS_ECON[GRLM0347861],-5AY,step,average)
1	econ_expr_data	04-30-2010	-1.34718
2	econ_expr_data	05-28-2010	-1.33648
3	econ_expr_data	06-30-2010	-1.42249
4	econ_expr_data	07-30-2010	-1.32352
5	econ_expr_data	08-31-2010	-1.28179
6	econ_expr_data	09-30-2010	-1.21514
7	econ_expr_data	10-29-2010	-1.01707
8	econ_expr_data	11-30-2010	-0.95096
9	econ_expr_data	12-31-2010	-0.76515
10	econ_expr_data	01-31-2011	-0.70250
11	econ_expr_data	02-28-2011	-0.54235
12	econ_expr_data	03-31-2011	-0.46460
13	econ_expr_data	04-29-2011	-0.54778
14	econ_expr_data	05-31-2011	-0.38856
15	econ_expr_data	06-30-2011	-0.51014
16	econ_expr_data	07-29-2011	-0.40330
17	econ_expr_data	08-31-2011	-0.03023
18	econ_expr_data	09-30-2011	-0.20943
19	econ_expr_data	10-31-2011	-0.06770
20	econ_expr_data	11-30-2011	0.48282
21	econ_expr_data	12-30-2011	0.49980
22	econ_expr_data	01-31-2012	0.68252
23	econ_expr_data	02-29-2012	0.82152
24	econ_expr_data	03-30-2012	0.84469
25	econ_expr_data	04-30-2012	0.81819
26	econ_expr_data	05-31-2012	0.88345
27	econ_expr_data	06-29-2012	1.09286
28	econ_expr_data	07-31-2012	1.02826
29	econ_expr_data	08-31-2012	1.19474
30	econ_expr_data	09-28-2012	1.45434
31	econ_expr_data	10-31-2012	1.43013
32	econ_expr_data	11-30-2012	1.69463
33	econ_expr_data	12-31-2012	1.59840
34	econ_expr_data	01-31-2013	.

Example 56.3: Using ECON_EXPR_DATA with the FQL Syntax for Function Returns

This example shows how to use the ExtractEconData factlet to retrieve the Returns for the GDPEURNS quarterly time series for Greece over the last 10 years by using the FQL economic download syntax. It is not necessary to use the IDS= option, because the FQL downloading syntax allows '@@GR' to be appended to the series name in the ITEMS= option. The PRINT procedure uses the LABEL option to allow the time series name to be in the column heading in the output. Without the LABEL option, the column heading would be 'ECON_EXPR_DATA'.

```
option validvarname=any
    sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Returns Using ECON_EXPR_DATA for the GDPEURNS@GR Series';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET)"
    debug=on
    factlet=ExtractEconData
    items="ECON_EXPR_DATA('RETURNS(EURO_STAT[GDPEURNS@GR],-1AQ,4)',0,0/0/-10,q)"
    format=sml
    outXml=fsdecon20
    automap=replace
    mapref=MyMap
    xmlmap="%sysget(FACTSET)fsdecon20.map"
    orientation=eti
    user='XXXXXXXXXXXXXXXXXX'
    pass='XXXXXXXXXXXXXXXXXX';

data EUROFunc; set xfsd.fsdecon20; run;
proc print data=EUROFunc label; run;
```

Output 56.3.1 Quarterly Returns of Series GDPEURNS@GR Using ECON_EXPR_DATA for Database
Source Name EURO_STAT

Retrieve Returns Using ECON_EXPR_DATA for the GDPEURNS@GR Series

Obs	FQL_Entity	date	RETURNS(EURO_STAT[GDPEURNS@GR],-1AQ,4)
1	econ_expr_data	06-30-2003	39.9255
2	econ_expr_data	09-30-2003	24.1206
3	econ_expr_data	12-31-2003	-2.9307
4	econ_expr_data	03-31-2004	-21.9838
5	econ_expr_data	06-30-2004	44.4186
6	econ_expr_data	09-30-2004	21.6794
7	econ_expr_data	12-31-2004	-3.2521
8	econ_expr_data	03-31-2005	-28.4104
9	econ_expr_data	06-30-2005	32.7385
10	econ_expr_data	09-30-2005	31.6561
11	econ_expr_data	12-30-2005	-6.1976
12	econ_expr_data	03-31-2006	-17.0596
13	econ_expr_data	06-30-2006	40.5935
14	econ_expr_data	09-29-2006	19.2535
15	econ_expr_data	12-29-2006	-0.3652
16	econ_expr_data	03-30-2007	-21.9820
17	econ_expr_data	06-29-2007	39.1451
18	econ_expr_data	09-28-2007	23.8728
19	econ_expr_data	12-31-2007	-7.5605
20	econ_expr_data	03-31-2008	-20.5704
21	econ_expr_data	06-30-2008	37.8653
22	econ_expr_data	09-30-2008	20.0536
23	econ_expr_data	12-31-2008	-19.1250
24	econ_expr_data	03-31-2009	-38.6740
25	econ_expr_data	06-30-2009	65.9728
26	econ_expr_data	09-30-2009	11.6375
27	econ_expr_data	12-31-2009	6.0947
28	econ_expr_data	03-31-2010	-39.8820
29	econ_expr_data	06-30-2010	35.5932
30	econ_expr_data	09-30-2010	10.4348
31	econ_expr_data	12-31-2010	-22.8435
32	econ_expr_data	03-31-2011	-33.6109
33	econ_expr_data	06-30-2011	43.5848
34	econ_expr_data	09-30-2011	15.9831
35	econ_expr_data	12-30-2011	-30.2577
36	econ_expr_data	03-30-2012	-33.0359
37	econ_expr_data	06-29-2012	41.0717
38	econ_expr_data	09-28-2012	.
39	econ_expr_data	12-31-2012	.
40	econ_expr_data	03-28-2013	.

Example 56.4: Using SPEC_ID_DATA with the FQL Economic Download Syntax

This example shows how to use the ExtractEconData factlet and SPEC_ID_DATA to retrieve the WTI-FDS:FG_PRICE daily time series for the last 30 days by using the FQL economic download syntax. For more information about real-time data and specifying identifiers for commodity spot prices, see the FactSet Online Assistant, page ID 16992.

```
option validvarname=any
    sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve WTI-FDS:FG_PRICE Using SPEC_ID_DATA for the Last 30 Days';
libname _all_ clear;

libname xfsd sasexfsd "%sysget (FACTSET) "
    debug=on
    factlet=ExtractEconData
    item="SPEC_ID_DATA('WTI-FDS:FG_PRICE',0,-30,d) "
    format=sml
    outXml=fsdecon14
    automap=replace
    mapref=MyMap
    xmlmap="%sysget (FACTSET) fsdecon14.map"
    orientation=eti
    user='XXXXXXXXXXXXXXXXXX'
    pass='XXXXXXXXXXXXXXXXXX';

data WTIPrice; set xfsd.fsdecon14; run;
proc print data=WTIPrice; run;
```

Output 56.4.1 Daily Series Using SPEC_ID_DATA for West Texas Intermediate Crude Oil Spot Price**Retrieve WTI-FDS:FG_PRICE Using SPEC_ID_DATA for the Last 30 Days**

Obs	FQL_Entity	spec_id_data	
		date	WTI-FDS:FG_PRICE
1	spec_id_data	02-20-2013	94.4600
2	spec_id_data	02-21-2013	92.8400
3	spec_id_data	02-22-2013	93.1300
4	spec_id_data	02-25-2013	93.1100
5	spec_id_data	02-26-2013	92.6300
6	spec_id_data	02-27-2013	92.7600
7	spec_id_data	02-28-2013	92.0500
8	spec_id_data	03-01-2013	90.6800
9	spec_id_data	03-04-2013	90.1200
10	spec_id_data	03-05-2013	90.8200
11	spec_id_data	03-06-2013	90.4300
12	spec_id_data	03-07-2013	91.5600
13	spec_id_data	03-08-2013	91.9500
14	spec_id_data	03-11-2013	92.0600
15	spec_id_data	03-12-2013	92.5400
16	spec_id_data	03-13-2013	92.5200
17	spec_id_data	03-14-2013	93.0300
18	spec_id_data	03-15-2013	93.4500
19	spec_id_data	03-18-2013	93.7400
20	spec_id_data	03-19-2013	92.1600
21	spec_id_data	03-20-2013	92.9600
22	spec_id_data	03-21-2013	92.4500
23	spec_id_data	03-22-2013	93.7100
24	spec_id_data	03-25-2013	94.8100
25	spec_id_data	03-26-2013	96.3400
26	spec_id_data	03-27-2013	96.5800
27	spec_id_data	03-28-2013	97.2300
28	spec_id_data	03-29-2013	97.2300
29	spec_id_data	04-01-2013	97.0700
30	spec_id_data	04-02-2013	97.1900
31	spec_id_data	04-03-2013	94.4500

Example 56.5: Using Multiple Database Sources with the FQL Syntax

This example shows how to use the ExtractEconData factlet and two database sources, FDS_ECON_DATA and EURO_STAT_DATA, to retrieve two time series for the last 11 months by using the FQL economic download syntax. The database source name is prepended to the time series name to retain the integrity of the name of the database source (dbsource). Only the same frequency and same range of observations for multiple series can be requested concurrently.

```
option validvarname=any
    sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Monthly Data from Two Database Sources: FDS_ECON_DATA and EURO_STAT';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET)"
    debug=on
    factlet=ExtractEconData
    items="FDS_ECON_DATA('FRBIPSB50001',-11,-1,M,STEP,AVERAGE,1),
    EURO_STAT_DATA('CONSCONFBAL@EUZ',-11,-1,M)"
    format=sml
    outXml=fsdecon17
    automap=replace
    mapref=MyMap
    xmlmap="%sysget(FACTSET) fsdecon17.map"
    orientation=eti
    user='XXXXXXXXXXXXXXXXXX'
    pass='XXXXXXXXXXXXXXXXXX';

data TwoSources; set xfsd.fsdecon17; run;
proc print data=TwoSources; run;
```

Output 56.5.1 Two Monthly Series Using Two Database Sources: FDS_ECON_DATA and EURO_STAT_DATA

Retrieve Monthly Data from Two Database Sources: FDS_ECON_DATA and EURO_STAT

Obs	FQL_ENTITY	fds_econ_data		euro_stat_data
		date	FRBIPSB50001	CONSCONFBAL@EUZ
1	fds_econ_data	04-30-2012	96.8572	-19.7000
2	fds_econ_data	05-31-2012	97.1042	-19.1000
3	fds_econ_data	06-29-2012	97.1322	-19.6000
4	fds_econ_data	07-31-2012	97.5571	-21.3000
5	fds_econ_data	08-31-2012	96.7850	-24.4000
6	fds_econ_data	09-28-2012	96.9549	-25.7000
7	fds_econ_data	10-31-2012	96.8281	-25.5000
8	fds_econ_data	11-30-2012	98.0201	-26.7000
9	fds_econ_data	12-31-2012	98.1594	-26.3000
10	fds_econ_data	01-31-2013	98.3042	-23.9000
11	fds_econ_data	02-28-2013	99.0446	-23.6000

Example 56.6: Retrieving Price Data for One Company

This simple example shows how to use the ExtractFormulaHistory factlet to retrieve price data for one company (in this case IBM).

```
options validvarname=any
      sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Price Data for IBM';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET)"
      debug=on
      factlet=ExtractFormulaHistory
      ids='ibm'
      items='p_price'
      dates='20110130:20111231:m'
      format=sml
      outXml=fsdex01
      automap=replace
      mapref=MyMap
      xmlmap="%sysget(FACTSET) fsdex01.map"
      orientation=eti
      user='XXXXXXXXXXXXXXXXXX'
      pass='XXXXXXXXXXXXXXXXXX';

data recentprice; set xfsd.fsdex01; run;
proc print data=recentprice; run;
```

Output 56.6.1 Price Data for IBM

Retrieve Price Data for IBM

Obs	FQL_Entity	date	p_price
1	ibm	01-31-2011	162.00
2	ibm	02-28-2011	161.88
3	ibm	03-31-2011	163.07
4	ibm	04-30-2011	170.58
5	ibm	05-31-2011	168.93
6	ibm	06-30-2011	171.55
7	ibm	07-31-2011	181.85
8	ibm	08-31-2011	171.91
9	ibm	09-30-2011	174.87
10	ibm	10-31-2011	184.63
11	ibm	11-30-2011	188.00
12	ibm	12-31-2011	183.88

Example 56.7: Retrieving Price and Sales Data for Multiple Companies

This example shows how to use the ExtractFormulaHistory factlet to retrieve several data items for several companies. The data items are price and sales, and the companies are IBM and FactSet (FDS).

```
options validvarname=any
      sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Price and Sales Data for IBM and FactSet (FDS)';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET)"
      debug=on
      factlet=ExtractFormulaHistory
      ids='ibm,fds'
      items='p_price,ff_sales'
      dates='20110130:20110631:m'
      format=sml
      outXml=fsdex02
      automap=replace
      mapref=MyMap
      xmlmap="%sysget(FACTSET) fsdex02.map"
      orientation=eti
      user='XXXXXXXXXXXXXXXXXX'
      pass='XXXXXXXXXXXXXXXXXX';

data priceSale; set xfsd.fsdex02; run;
proc print data=priceSale; run;
```

Output 56.7.1 Multiple Data Items for IBM and FactSet

Retrieve Price and Sales Data for IBM and FactSet(FDS)

Obs	FQL_ENTITY	date	p_price	ff_sales
1	ibm	01-31-2011	162.000	99870.00
2	ibm	02-28-2011	161.880	99870.00
3	ibm	03-31-2011	163.070	99870.00
4	ibm	04-30-2011	170.580	99870.00
5	ibm	05-31-2011	168.930	99870.00
6	ibm	06-30-2011	171.550	99870.00
7	fds	01-31-2011	100.800	641.06
8	fds	02-28-2011	104.880	641.06
9	fds	03-31-2011	104.730	641.06
10	fds	04-30-2011	109.410	641.06
11	fds	05-31-2011	110.860	641.06
12	fds	06-30-2011	102.320	641.06

Example 56.8: Retrieving Book Value Data for One Company by Using Relative Dates

This example shows how to use the ExtractFormulaHistory factlet to retrieve book value data for one company (in this case Exxon Mobil, or XOM) by using relative dates. The book value represents the proportional common equity divided by outstanding shares at the end of the company's fiscal year. The relative date specifies the date as n periods ago based on the frequency (specified or implied); for example, DATES=0:-8:y returns data for the nine years prior to the most recently updated year.

```
options validvarname=any
      sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Book Value Data for Exxon Mobil (XOM) for the Last 9 Years';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET)"
      debug=on
      factlet=ExtractFormulaHistory
      ids='xom'
      items='ff_bps'
      dates='0:-8:y'
      format=sml
      outXml=fsdex03
      automap=replace
      mapref=MyMap
      xmlmap="%sysget(FACTSET) fsdex03.map"
      orientation=eti
      user='XXXXXXXXXXXXXXXXXX'
      pass='XXXXXXXXXXXXXXXXXX';

data bookRelative; set xfsd.fsdex03; run;
proc print data=bookRelative; run;
```

Output 56.8.1 Book Value Data for Exxon Mobil for the Last 9 Years

Retrieve Book Value Data for Exxon Mobil (XOM) for the Last 9 Years

Obs	FQL_Entity	date	ff_bps
1	xom	12-31-2004	15.8969
2	xom	12-31-2005	18.1291
3	xom	12-31-2006	19.8715
4	xom	12-31-2007	22.6239
5	xom	12-31-2008	22.7020
6	xom	12-31-2009	23.3910
7	xom	12-31-2010	29.4917
8	xom	12-31-2011	32.6143
9	xom	12-31-2012	36.8421

Example 56.9: Retrieving Multiple Screen Items for Multiple Companies

This example shows how to use the ExtractDataSnapshot factlet to extract multiple screen items (price and sales) as of a single date for multiple companies (in this case IBM and Microsoft) for the quarterly estimate period (PERIOD=QTR).

```
options validvarname=any
      sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Multiple Screen Items for Multiple Companies';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET) "
      debug=on
      factlet=ExtractDataSnapshot
      ids='ibm,msft'
      items='p_price,ff_sales'
      dates='20110401'
      period=QTR
      format=sml
      outXml=fsdex05
      automap=replace
      mapref=MyMap
      xmlmap="%sysget(FACTSET) fsdex05.map"
      orientation=eti
      user='XXXXXXXXXXXXXXXXXX'
      pass='XXXXXXXXXXXXXXXXXX';

data snapshot; set xfsd.fsdex05; run;
proc print data=snapshot; run;
```

Output 56.9.1 Multiple Screen Items for Multiple Companies

Retrieve Multiple Screen Items for Multiple Companies

Obs	FQL_ENTITY	date	p_price	ff_sales
1	ibm	04-01-2011	164.270	24607
2	msft	04-01-2011	25.480	16428

Example 56.10: Retrieving Data by Using the ISON= and ISONPARAMS= Options

This example shows how to use the ExtractDataSnapshot factlet to retrieve price-to-earnings (PE) data for the quarterly estimate period by using the ISON= and ISONPARAMS= options. For brevity, only a subset of the output (the first 10 CUSIPs) is displayed.

```
options validvarname=any
  sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Price-to-Earnings Data by Using ISON/ISONPARAMS';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET)"
  debug=on
  factlet=ExtractDataSnapshot
  ison='sp500'
  isonparams='0,1'
  items='ff_pe'
  dates='20110401'
  period=QTR
  format=sml
  outXml=fsdex10
  automap=replace
  mapref=MyMap
  xmlmap="%sysget(FACTSET) fsdex10.map"
  orientation=eti
  user='XXXXXXXXXXXXXXXXXX'
  pass='XXXXXXXXXXXXXXXXXX';

data snapIson; set xfsd.fsdex10; run;
proc print data=snapIson(firstobs=1 obs=10); run;
```

Output 56.10.1 Retrieving Price-to-Earnings Data by Using the ISON= and ISONPARAMS= Options
Retrieve Price-to-Earnings Data by Using ISON/ISONPARAMS

Obs	FQL_Entity	date	ff_pe
1	17290810	04-01-2011	18.1419
2	41308610	04-01-2011	13.2635
3	80589M10	04-01-2011	13.3007
4	50242410	04-01-2011	9.5995
5	91301710	04-01-2011	17.2053
6	97665710	04-01-2011	14.5238
7	00130H10	04-01-2011	.
8	31190010	04-01-2011	33.0765
9	20911510	04-01-2011	13.5979
10	53983010	04-01-2011	10.0212

Example 56.11: Retrieving Benchmark Data by Using the CUTOFF= Option

This example shows how to use the ExtractBenchmarkDetail factlet to retrieve the holdings for the Standard & Poor's (S&P) 500 (ID='sp50') and display the P_PRICE data that correspond to each holding. For brevity, only a subset of the output (the first 10 holdings) is displayed.

```
options validvarname=any
      sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Benchmark Data for Top Ten Holdings, CUTOFF=10';
libname _all_ clear;

libname fsd sasexfsd "%sysget(FACTSET)"
      debug=on
      factlet=ExtractBenchmarkDetail
      ids='sp50'
      items='p_price,proper_name'
      dates='20130320'
      cutoff=10
      format=sml
      outXml=fsdex12
      automap=replace
      mapref=MyMap
      xmlmap="%sysget(FACTSET) fsdex12.map"
      orientation=eti
      user='XXXXXXXXXXXXXXXXXX'
      pass='XXXXXXXXXXXXXXXXXX';

data bench;
      set fsd.fsdex12;
run;
proc print
      data=bench;
run;
```

The CUTOFF= option limits the output to the number of holdings that are specified. This example uses CUTOFF=10 to print the top 10 holdings. If you omit the CUTOFF= option, all 500 holdings are reported.

Output 56.11.1 *continued*

Output 56.11.1 Retrieving Benchmark Data for Top 10 Holdings in the S&P 500 Index

Retrieve Benchmark Data for Top Ten Holdings, CUTOFF=10

Obs	FQL_ENTITY	date	SECURITY_ID	Weight	p_price	proper_name
1	SP50	.	41308610	.	44.4800	Harman International Industries Inc.
2	SP50	.	80589M10	.	49.5100	SCANA Corp.
3	SP50	.	50242410	.	81.2100	L-3 Communications Holdings Inc.
4	SP50	.	91301710	.	93.4500	United Technologies Corp.
5	SP50	.	97665710	.	41.4400	Wisconsin Energy Corp.
6	SP50	.	00130H10	.	12.6800	AES Corp.
7	SP50	.	31190010	.	51.4700	Fastenal Co.
8	SP50	.	20911510	.	59.1600	Consolidated Edison Inc.
9	SP50	.	53983010	.	92.2400	Lockheed Martin Corp.
10	SP50	12-31-2000	17290810	.	43.8800	Cintas Corp.

Example 56.12: Retrieving Benchmark Data by Using the MATCHDATE= Option

This example shows how to use the ExtractBenchmarkDetail factlet to retrieve data from the Prices database for the Russell 1000 constituents (R.1000).

```
options validvarname=any
      sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Benchmark Data for R.1000 with MATCHDATE=ON';
libname _all_ clear;

libname fsd sasexfsd "%sysget(FACTSET)"
      debug=on
      factlet=ExtractBenchmarkDetail
      ids='r.1000'
      items='p_price'
      dates='20120118:20120113:b'
      matchDate=on
      format=sml
      outXml=fsdex13
      automap=replace
      mapref=MyMap
      xmlmap="%sysget(FACTSET) fsdex13.map"
      orientation=eti
      user='XXXXXXXXXXXXXXXXXX'
      pass='XXXXXXXXXXXXXXXXXX';

data benchmatch;
      set fsd.fsdex13;
run;
proc print
      data=benchmatch(firstobs=1 obs=50);
run;
```

If the frequency argument were not set to B (indicating business days) and the MATCHDATE= option were not turned on, the output would contain repetitive dates because of feel-back, resulting in unnecessarily lengthy output.

Output 56.12.1 Retrieving Benchmark Data for the Russell 1000 Index by Using the MATCHDATE=ON Option**Retrieve Benchmark Data for R.1000 with MATCHDATE=ON**

Obs	FQL_ENTITY	date	SECURITY_ID	Weight	p_price
1	R.1000	01-17-2012	30231G10	3.17717	85.690
2	R.1000	01-17-2012	03783310	2.95608	424.700
3	R.1000	01-17-2012	45920010	1.64095	180.000
4	R.1000	01-17-2012	16676410	1.61489	106.720
5	R.1000	01-17-2012	59491810	1.57846	28.255
6	R.1000	01-17-2012	36960410	1.49591	18.740
7	R.1000	01-17-2012	74271810	1.39208	66.260
8	R.1000	01-17-2012	00206R10	1.34835	30.250
9	R.1000	01-17-2012	47816010	1.34355	65.120
10	R.1000	01-17-2012	71708110	1.30536	21.935
11	R.1000	01-17-2012	38259P50	1.19073	628.580
12	R.1000	01-17-2012	94974610	1.10366	29.825
13	R.1000	01-17-2012	46625H10	1.04412	34.910
14	R.1000	01-17-2012	08467070	1.02732	77.970
15	R.1000	01-17-2012	71817210	1.01597	75.900
16	R.1000	01-17-2012	19121610	1.00150	33.675
17	R.1000	01-17-2012	45814010	0.99967	25.040
18	R.1000	01-17-2012	58933Y10	0.90210	38.820
19	R.1000	01-17-2012	92343V10	0.83088	39.020
20	R.1000	01-17-2012	68389X10	0.79993	27.660
21	R.1000	01-17-2012	17275R10	0.79941	19.305
22	R.1000	01-17-2012	93114210	0.79937	59.850
23	R.1000	01-17-2012	58013510	0.78525	100.550
24	R.1000	01-17-2012	71344810	0.76915	64.650
25	R.1000	01-17-2012	74752510	0.71803	57.140
26	R.1000	01-17-2012	20825C10	0.70754	70.800
27	R.1000	01-17-2012	80685710	0.69083	67.640
28	R.1000	01-17-2012	00282410	0.65197	55.710
29	R.1000	01-17-2012	17296742	0.61791	28.215
30	R.1000	01-17-2012	67459910	0.60755	99.300
31	R.1000	01-17-2012	25468710	0.54744	38.480
32	R.1000	01-17-2012	91301710	0.53072	77.040
33	R.1000	01-17-2012	20030N10	0.52974	25.535
34	R.1000	01-17-2012	43707610	0.52612	43.740
35	R.1000	01-17-2012	14912310	0.50160	103.370
36	R.1000	01-17-2012	02313510	0.49686	181.660
37	R.1000	01-17-2012	06050510	0.49422	6.480
38	R.1000	01-17-2012	60920710	0.47423	38.130
39	R.1000	01-17-2012	02209S10	0.45520	28.900
40	R.1000	01-17-2012	88579Y10	0.45049	84.230
41	R.1000	01-17-2012	03116210	0.45029	68.070
42	R.1000	01-17-2012	91324P10	0.43685	53.570
43	R.1000	01-17-2012	12665010	0.43416	42.540
44	R.1000	01-17-2012	11012210	0.43298	33.720
45	R.1000	01-17-2012	09702310	0.41809	75.240
46	R.1000	01-17-2012	90297330	0.41721	28.770
47	R.1000	01-17-2012	91131210	0.41034	74.200

Output 56.12.1 *continued***Retrieve Benchmark Data for R.1000 with MATCHDATE=ON**

Obs	FQL_ENTITY	date	SECURITY_ID	Weight	p_price
48	R.1000	01-17-2012	90781810	0.40428	109.500
49	R.1000	01-17-2012	92826C83	0.40357	102.530
50	R.1000	01-17-2012	02581610	0.39715	50.220

Example 56.13: Retrieving Multiple Items for Multiple Companies from an OFDB File

This example shows how to use the ExtractOFDBItem factlet to retrieve the uploaded share and price data for IBM and Microsoft from an OFDB file named SASTESTING for an absolute date range, starting February 27, 2012, and ending February 28, 2012, with a monthly frequency.

```
options validvarname=any
    sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve Shares and Price Data for IBM and MSFT from an OFDB File';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET)"
    debug=on
    factlet=ExtractOFDBItem
    ofdb='SASTESTING.OFDB'
    ids='ibm,msft'
    items='shares,price'
    dates='20120227:20120228:d'
    period=QTR
    format=sml
    outXml=fsdex07
    automap=replace
    mapref=MyMap
    xmlmap="%sysget(FACTSET) fsdex07.map"
    orientation=eti
    user='XXXXXXXXXXXXXXXXXX'
    pass='XXXXXXXXXXXXXXXXXX';

data shareOFDB; set xfsd.fsdex07; run;
proc print data=shareOFDB; run;
```

Output 56.13.1 Multiple Items for Multiple Companies from an OFDB File**Retrieve Shares and Price Data for IBM and MSFT from an OFDB File**

Obs	FQL_ENTITY	date	ofdb_shares	ofdb_price
1	ibm	02-27-2012	1178.60	1.000
2	ibm	02-28-2012	1178.60	197.980
3	msft	02-27-2012	8412.20	1.000
4	msft	02-28-2012	8412.20	31.870

Example 56.14: Retrieving a List of Securities from an OFDB File

This example shows how to use the ExtractOFDBUniverse factlet to retrieve a list of securities that belong to a single OFDB file named SASTESTING for February 27, 2012. For brevity, only a subset of the output (the first 15 securities) is displayed.

```
options validvarname=any
    sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve List of Securities Belonging to a Single OFDB File';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET) "
    debug=on
    factlet=ExtractOFDBUniverse
    ofdb='SASTESTING.OFDB'
    dates='20120227'
    format=sml
    outXml=fsdex08
    automap=replace
    mapref=MyMap
    xmlmap="%sysget(FACTSET) fsdex08.map"
    user='XXXXXXXXXXXXXXXXXX'
    pass='XXXXXXXXXXXXXXXXXX';

data ofdbUniv; set xfsd.fsdex08; run;
proc print data=ofdbUniv(firstobs=1 obs=15); run;
```

Output 56.14.1 List of Securities from a Single OFDB File

Retrieve List of Securities Belonging to a Single OFDB File

Obs	CUSIP
1	00105510
2	00120410
3	00130H10
4	00206R10
5	00282410
6	00289620
7	00507K10
8	00724F10
9	00790310
10	00817Y10
11	00846U10
12	00915810
13	00936310
14	00971T10
15	01381710

Example 56.15: Retrieving a List of CUSIPs from a Screen File

This example shows how to use the ExtractScreenUniverse factlet to retrieve a list of CUSIPs and names that belong to a single user-defined screen file. For brevity, only a subset of the output (the first 15 securities) is displayed.

```
options validvarname=any
      sslcalistloc="/SASSecurityCertificateFramework/1.1/cacerts/trustedcerts.pem";

title 'Retrieve List of Securities Belonging to a Single Screen File';
libname _all_ clear;

libname xfsd sasexfsd "%sysget(FACTSET) "
      debug=on
      factlet=ExtractScreenUniverse
      screen='factset:bankruptcy'
      name=y
      format=sml
      outXml=fsdex09
      automap=replace
      mapref=MyMap
      xmlmap="%sysget(FACTSET) fsdex09.map"
      user='XXXXXXXXXXXXXXXXXX'
      pass='XXXXXXXXXXXXXXXXXX';

data screenUniv; set xfsd.fsdex09; run;
proc print data=screenUniv(firstobs=1 obs=15); run;
```

Output 56.15.1 List of CUSIPs and Names from a Screen File

Retrieve List of Securities Belonging to a Single Screen File

Obs	Id	Name
1	00081T10	ACCO BRANDS CORP
2	00258J10	ABAKAN INC
3	00439710	ACCURAY INC
4	00439T20	ACCURIDE CORP
5	00520810	ADA-ES INC
6	00752K10	ADVANCED CELL TECHNOLOGY INC
7	00847J10	AGILYSYS INC
8	02051Q10	ALON HOLDINGS BLUE SQUARE IS
9	02152V10	ALTEROLA BIOTECH INC
10	02153D10	ALTERRA POWER CORP
11	03011110	AMERICAN SUPERCONDUCTOR CP
12	03236M10	AMYRIS INC
13	03242010	ANACOR PHARMACEUTICALS INC
14	04269E10	ARQULE INC
15	04544X30	ASSISTED LIVING CONCEPTS INC

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